

# MOTOR AGE

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CHICAGO, DECEMBER 14, 1905

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# MOTOR AGE

VOL. VIII NO. 24

CHICAGO, DECEMBER 14, 1905

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## AUTUMN RAMBLE THROUGH PENNSYLVANIA

**N**OVEMBER in Pennsylvania is noted for its semi-occasional days when all nature seems to be at peace, when winds are lulled, skies are clear, temperature Junish and the faint haze which o'er-spreads hill and valley is often accentuated by the scattered forest fires peculiar to the season. Were it not for the numerous evidences on every hand that the sturdy husbandman has garnered his crops and has everything snug for approaching winter, one might well

imagine it an exceptional day in early summer; but the trees are almost entirely stripped of their summer raiment, which, shriveled and brown, has been cast back on the bosom of old Mother Earth, whence it came. Such a day at such a season almost invariably gives one the impression of a calm before a storm—indeed, the next day is likely to be of the typical November variety, with a chilly rain and howling winds to chill all enthusiasm.

It is an ideal season for 1-day trips and it was on such an Indian summer day that a party left home in Philadelphia for a ramble to the north—with no especial objective point and, stowed away in the tonneau, a comfortable-looking and capacious hamper, prepared by the women, which made the oftentimes important question of dinner a negligible quantity. It is a comfort to know that one is not to be hampered by the demands of the inner man—or woman—and the meal schedules of rural Bonifaces, who are prone to adhere too closely to the time-table, regardless of the wants of belated automobilists.

As the travelers swept north on magnificent Broad street, the Quaker city's crack highway—14 miles long and asphalted nearly the entire distance—even the sturdy Rambler seemed to have imbibed some of the enthusiasm inspired by the perfect day, for it bounded ahead at a pace which on more



A DASH DOWN INTO RUSH VALEY

than one occasion brought forth a warning wave of the hand from the gasping law minions who stood on the shady sidewalks, lazily swinging their clubs and doubtless deploring their haste in changing their underwear.

The foxy Quaker city automobilist, in taking a trip, always considers how he may avoid the omnipresent toll-gate—if not entirely, at least in part. At its northern end Broad street debouches into the old York road, where, in a swift-moving car, the toll-gates seem almost as numerous as the trolley poles which line either side of the splendid highway. Those in the know always side-step as much of this and any other toll road as they can. Therefore a detour via Cayuga street and Wayne avenue to Washington lane was decided on, and in a few minutes the ramblers were in the heart of historic Germantown, with its pre-revolutionary stone mansions and its high hedges. There's something about Germantown that reminds one of rural England. Indeed, a sizable proportion of its present population can trace their ancestry back to the tight little isle. The detour cost the turnpike company two tolls and as the car flashed across the old York road at Ogontz the members of the party mentally thumbed

their noses and wiggled their fingers at the unsuspecting toll-taker in the little yellow house in the distance. While on the matter of toll-gates a little tip to the tyro is in order. Invariably on approaching a gate which is situated on a down grade—and many of them are—it is prudent to have something happen to the brakes, and when the toll-gate keeper comes out of his house, with his hand extended in his matter-of-fact way, to be busily engaged in trying to get the car under control. Everybody does it—indeed, one almost imagines that the toll-taker at a down-grade gate expects it, for after a shout and jotting down the license number—if he can get a glimpse of it in the dust and rush—he saunters back to his chair and his paper, confident of getting you on the return trip. But of course a different route is taken for the return trip, and when one travels again in that direction he usually relies on repeating the trick—and usually gets away with it, unless he meets at the gate another vehicle whose bucolic owner is paying toll and swapping neighborhood gossip with the keeper. Of course, on an up grade one usually pays—unless the hill is a short one which can be rushed.

Crossing the old York road at Ogontz, which, by the way, derived its present name from the country seat of Jay Cooke, a financier of note during the rebellion, and which in days ago bore the euphonious title of Shoemakersville, the quakers sped on through the crisp brown leaves, past pretty Rydal and Meadow Brook, with its golf links and handsome hunt club house, till they swung into the old Second street pike at the top of Hallowell's Hill. By the way, there is a certain enjoyment, which one cannot exactly explain, to be derived listening to the zip! zip! zip! the wheels make in crushing down a bunch of dry





ALONG THE DELAWARE AND LEHIGH CANAL NEAR ERWINA—A PICTURESQUE BIT OF SCENERY

leaves in the road. Who can explain it? A psychologist could get four or five stick-fuls out of such a pregnant subject as that.

From the top of Hallowell's hill one gets a birdseye view of the Huntingdon valley, one of the most fertile agricultural sections of eastern Pennsylvania. As far as the eye can see are fields of various shades of brown, checker-boarding the prospect, every other one, apparently, dotted with shocks of corn. From such a height the Indian summer haze becomes apparent even to the casual observer. Far off, the foothills of the Blue mountains are clothed with its misty indistinctness almost to the point of obliteration. But while the tourists commented on it they had dropped down to the floor of the valley, over the bridge across Pennypack creek and up the opposite slope past Bethayres station on the Reading's Bound Brook route between Philadelphia and New York. It is a rather stiff climb and a long one, but the Rambler took it on the high speed without a murmur. Passing the ancient Lady Washington inn, the oldest hostelry on the pike and famous for having entertained within its four walls in days ago many men and women famous in state and nation, the top of the grade was reached, where by turning to look over the road it was just possible to distinguish through the haze old Billy Penn on the top of the city hall, just 15 miles away.

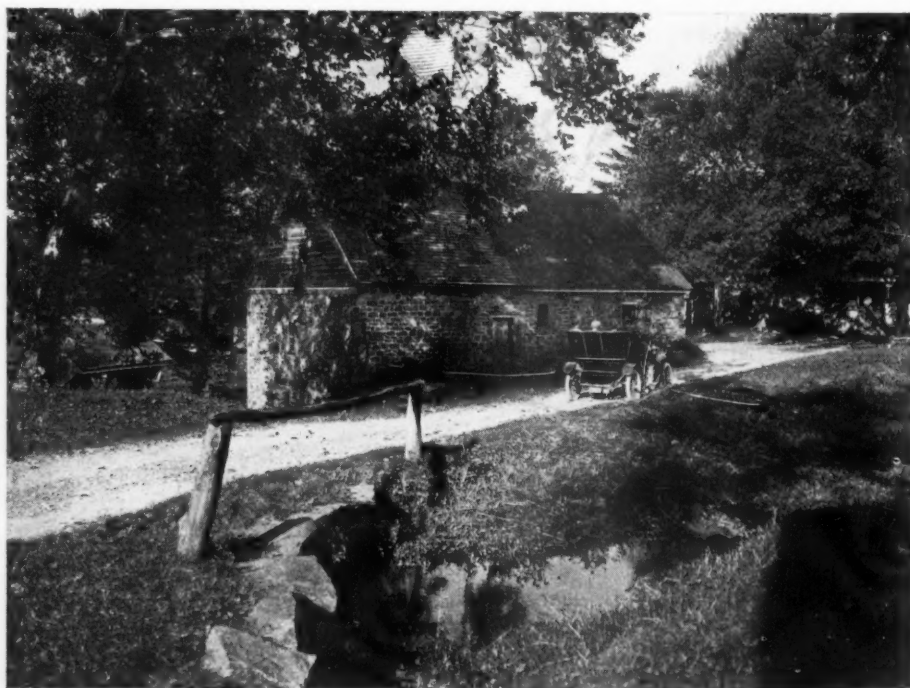
The route traveled was a famous stamping ground for cyclists in the last decade of the nineteenth century—sounds a long while ago, doesn't it?—and leads to one of the old-fashioned inns where the wheelmen were wont to congregate in the '90s—the Sorrel Horse. The road forks immediately in front of this famous caravansary, and there was some discussion as to which should be taken. To the left lies Hatboro, to the right Southampton. The city folk had often been in Hatboro, but once in Southampton—to the right, then. And over the fair to good road they make good time up hill and down dale through Southampton and Cornell, and in a quarter of an hour reach the

Richboro and Pineville pike at the first-named place. Northward they went and ere long, after mounting a short but steep grade, the wide expanse of Rush valley burst into view, and as they descended the hill under brakes they saw trouble ahead. A four-horse team was drawing a loaded hay wagon up the long hill, and as the leaders caught sight of the motorists sliding rapidly down upon them they began to act like real circus horses. They stood on their hind legs and waved their front ones in the air. The motorists stopped and the camera man took advantage of the opportunity to snap off the scene. The driver jumped from his seat and shouting to the people in the car to stay where they were, he unhitched the two leaders and took them to the rear of his load, where he tied

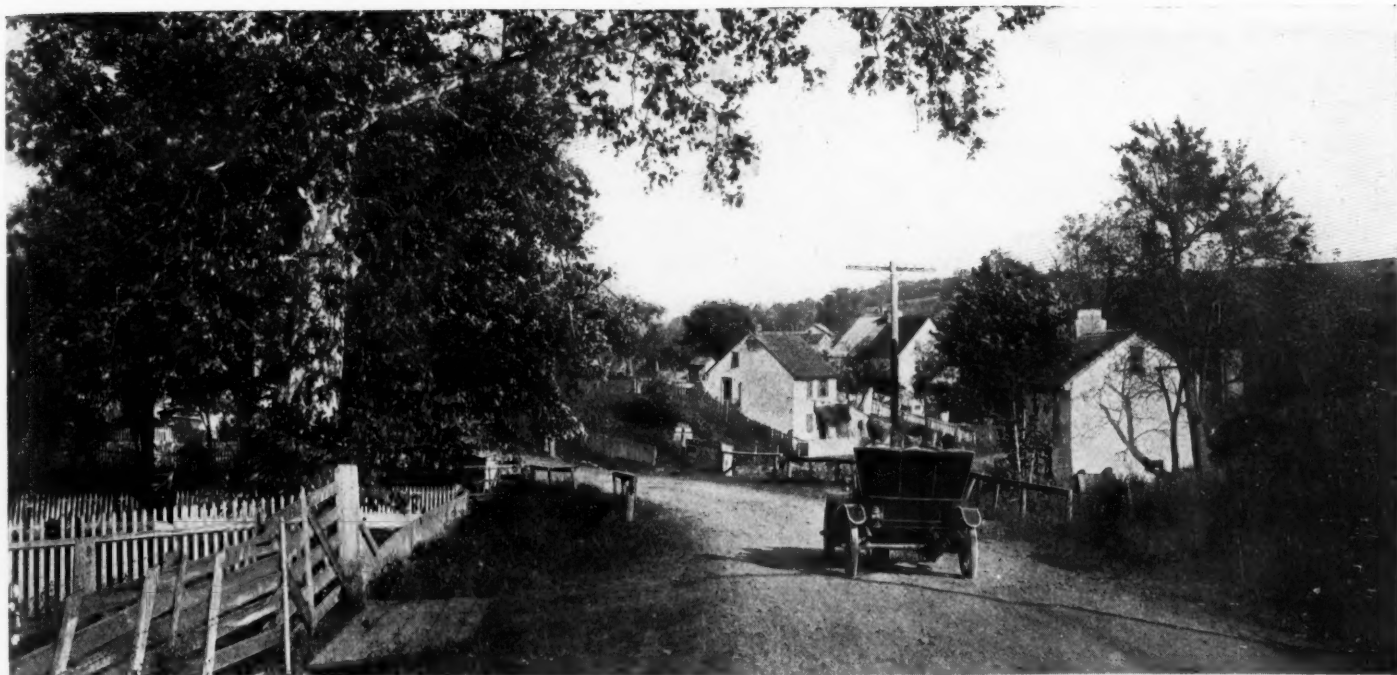
them securely. Returning to the two wheelers he stood at their heads and shouted, "Come on!" Releasing the brakes the car slid slowly and noiselessly past and as it swung around the turn beyond the travelers looked back and saw him putting his team in shape for the long pull to the crest.

This Richboro and Pineville pike is such an up-and-down affair that the Philadelphians had great bad luck at the toll-gates, their brakes getting out of order with such persistency as to save two dimes in the coin of the realm. Who says there is not a silver lining to every cloud? Half-way to Pineville the old covered bridge over the Neshaming came into view.

At Pineville the pike veers to the westward in order to avoid Buckingham mountain, which is quite the highest ground in



BEAUTIFUL PHILLIPS' MILLS, WITH ART SCHOOL AMONG TREES AT RIGHT



ENTERING NEW HOPE OVER THE SMOOTH DOYLESTOWN AND NEW HOPE PIKE

Bucks county, and, the mountain having been left to the rear, the party crossed Lahaska creek, and climbed up to Centreville, or Buckingham, where the Pineville pike debouches into the Doylestown and New Hope pike. Here another council of war was held and the route question discussed in all its bearings. Finally some one mentioned dinner—it was then 11:30—and the camera man settled the matter by averring that he knew the best place in Bucks county to spread the lunch for the party.

"To the right then," he said, and once more the car was under way and headed toward the Delaware, 8 miles away, passing in Centreville one of the numerous inns where General Washington slept overnight and the hostelry was over 25 years old when it happened!

Through Greenville, or Holicong, the road winds through a country which fairly teems with reminders of the redskins' presence there over 100 years ago. Almost every hill, creek and village has an Indian name in addition to its English one, and in the majority of instances the former is the more sweet-sounding. Beyond Holicong the ramblers again, after a downward rush through the sweet-smelling country, crossed Lahaska creek, which follows the road around the base of Buckingham mountain—or perhaps it was the road that did the following. Lahaska, a pretty little village, lies just beyond. Its name, which of course is of Indian origin, is variously rendered in the old records—Lehoskuk, Lehaskee and Laskuk—and means big mountain—referring, of course, to Buckingham mountain, the high-

est ground in this section for miles around.

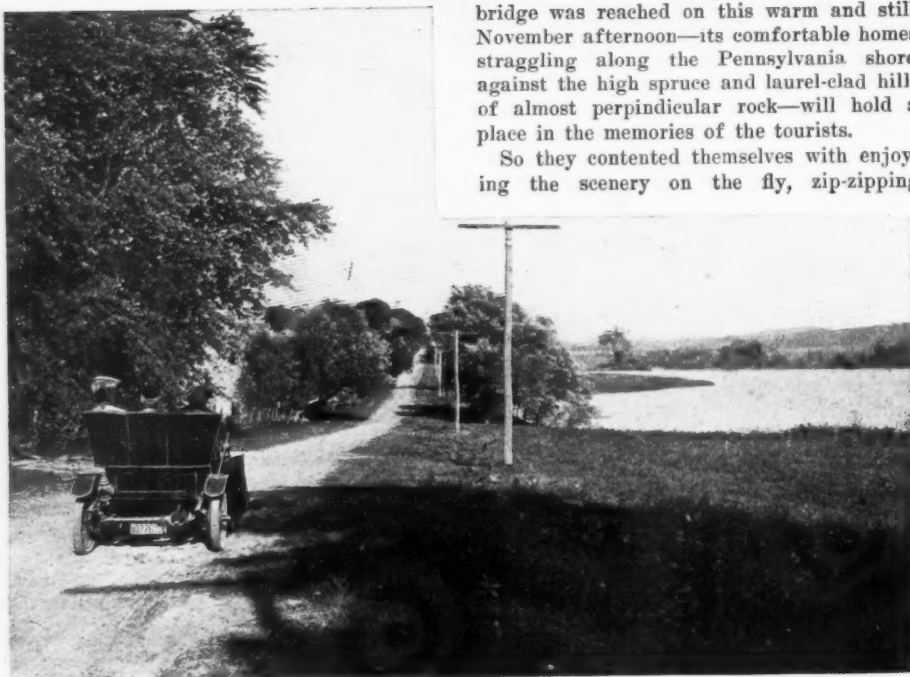
Beyond Lahaska the road begins to drop gradually, and the city people had not progressed far before the camera fiend, pointing to the left, said: "There's the place!" And under his direction the Rambler was guided under the trees as near as possible to one of the biggest springs it has ever been the writer's fortune to see. Aque-tong spring—also called Ingham's spring—is 15 feet deep and provides a sufficient volume of water to feed a lake covering 17 acres. It's cool, limpid water doubtless quenched the thirst of the red man 100 years ago as it does that of the automobilist nowadays. It is often mentioned in the old records, and many an Indian campfire has doubtless been reflected from its cool depths. A peculiar feature of Aque-tong spring is that it has a subterranean connection with a spring at Deer park, several miles away across the hills. It is a common practice to drop a chip, with one's name written on it, in Deer park spring, and in 3 days or thereabouts it can be found floating in Aque-tong spring.

It was at this picturesque and historic spot that the party discussed its cold ham, chicken and other solids and liquids which the automobilist feminine knows so well how to prepare. And all hands were willing to admit that when he proposed the lunching-place the camerist knew what he was talking about.

In a very few minutes after the sight-seers started they came to Aque-tong lake, which is formed by the overflow from Aque-tong spring. Then came the Doylestown and New Hope pike, and almost before they knew it they had surmounted the last rise separating them from the Delaware and the autumn beauties of the famous valley lay spread out at their feet. Below in the foreground lay New Hope, which is famed in history as the place where Washington's ragged army crossed the Delaware on its way from its winter quarters at Valley Forge, in pursuit of the British army under Lord Howe, which had just evacuated



SHOWING ROCKS 1-2 MILE LONG AND 500 FEET HIGH AT NARROWSVILLE



LAKE COVERING 17 ACRES, FED BY COOL, LIMPID WATER FROM AQUETONG SPRING

Philadelphia and was retreating toward the Hudson. It was called Coryell's ferry in those old revolutionary days, and Lambertville, on the Jersey side, wasn't even thought of then. A grist mill on the Pennsylvania side was later named Hope Mills, and when it burned down and a new and larger one was built the owner named it New Hope Mills, the little town which gathered around the mill and the tavern being eventually named New Hope.

From the top of the long grade back of New Hope a charming view of the Delaware valley for 20 miles in either direction is had and the travelers bowled down the grade and through the quaint town without a halt, turning left into the river road alongside the Delaware and Lehigh canal, which parallels the river for miles. The road hugs the canal like a brother, crossing to the river side from time to time as the rocky promontories intrude too closely upon the bank and returning when the cliffs retreat.

Following the river road Phillips' mill, which once performed the usual function of grinding the neighboring farmers' grain into flour and meal, was soon reached. Several years ago it and the accompanying dwelling were acquired by an artist who spent a wad of money and transformed the place into an art school, where students may study art and enjoy an outing at one and the same time. It is quite a popular resort in summer, and nature furnishes opportunities galore here for the students to study her charms.

Just above Phillips' mill the road passes through Centre Bridge, and still farther west—for the river just here runs almost due east and west—the party astonished the Lumbervillers by spinning through their quaint little canal town at a 20-mile clip. Soon they arrived at Point Pleasant, where the Delaware resumes its general north-and-south direction. At this place the romantic Tohichon empties into the Delaware, and the scene presented by the charming little village as the farthest end of the covered

bridge was reached on this warm and still November afternoon—its comfortable homes straggling along the Pennsylvania shore against the high spruce and laurel-clad hills of almost perpendicular rock—will hold a place in the memories of the tourists.

So they contented themselves with enjoying the scenery on the fly, zip-zipping

through the dry leaves as they passed under the still partly-clad trees, and crossing and recrossing the canal as the cliffs encroach on the road and force it to the farther side. The camera man reminded his friends just here that on such a day the river road is preferable to the hot and hilly pike, 4 miles to the west and running almost parallel with the river.

About 8 miles from Point Pleasant is Uhlerstown. Here it is possible to cross the Delaware to Frenchtown, N. J., and get somewhat better roads up to Milford, but the ramblers decided to stick to the river road on account of the scenic beauties the Pennsylvania side afforded, not to mention the fact that in this weather the road is rated from fair to good. Uhlerstown should really be called Moyertown—a man named Moyer bought the whole town outright a few years ago for \$15,000—but Uhlerstown it has been for half a century, and the natives in these country towns are a little sot in their ways, and Uhlerstown it remains. These little bits of history in passing are handed out gratuitously by the camera fiend who, it appears, had bicycled through this territory some years ago.

Just above Uhlerstown the Delaware describes about 150 degrees of a circle, forcing its way through some foothills that very nearly approach the mountain stage. At Lodi, Bridgeton and Upper Black's eddy—Point Pleasant, about 13 miles back, was at one time called Lower Black's eddy—the cliffs close to the left become more prominent and seemingly closer to the road the farther they advance, shutting off the sunlight. At Narrowville—a straggling village in which it is possible only in certain places to squeeze a house between the road and the cliff—the rocky heights so encroach on the road that in places it is just about wide enough for one vehicle to comfortably amble along. This bit of road through the narrows costs the county and township authorities quite a pretty penny every year. After a heavy rainstorm the road is always badly washed—not alone in the usual way,

but also from veritable cataracts from the cliffs above. It appears that the natural drainage is not sufficient to carry off the surface water into the gullies and gorges here and there in the cliffs, and as the slope is riverward, in many places the water drains directly over the edge of the cliff onto the road, from 250 to 300 feet below. It may well be imagined that in wet weather this road is impassable and that deep holes are worn in the many places where the oftentimes formidable, if temporary, cataracts have done business.

Beyond Narrowville the prospect opens out somewhat, and once more the tourists were out in the sunlight. The driver had been looking at his watch and taking a squint at the sun every now and then; but the camera man, who has packed up his kit for the day—having run out of plates—called his attention to the fact that "there's to be a three-quarter moon tonight, and there's no need of worrying about getting home before dark." He had hardly uttered the words when the right front tire went flat with a spiteful hiss. An ordinary wire-nail of commerce, bent almost v-shape, had punctured both shoe and inner tube. That nail cost many, many minutes before the party reached home. It was indeed fortunate that there was a moon and that the night was clear.

At Kintnersville they left the Delaware to swing once more into its north-and-south course and headed for home by way of the pike. After such a long stretch of level road as the route along the river gave them they rather welcomed the ups-and-downs afforded by the pike between Easton and Philadelphia. Indeed, it almost seemed as if there were no levels—they were going either up or down hill constantly—a pleasant sensation and one that was enjoyed.

A turn to the right here would have headed the travelers toward Easton, the



AQUETONG SPRING, 15 FEET DEEP

Water Gap and the Poconos. That would have meant a trip of 2 or more days. With the conditions ideal, it was with regret that the turn to the left was made and the home run finished. But the intention is to do the gap and the Poconos some day. The Monroe and Pike county roads are famous, not alone as well-made and well-kept highways, but as affording the lover of beautiful scenery unlimited opportunities of enjoyment. That entire region is the summer playground of tens of thousands of Philadelphians, and even in winter the all-year class of the hundreds of resorts are fairly well patronized.

It is an almost constant climb until they reached Ferndale, where they took the left fork to Revere and then followed a good dirt road to Ottsville—a country dotted at frequent intervals with pre-revolutionary farm houses and inns, one of the latter, the Harrow, having, of course, been honored by an overnight stay of the father of his country. It is indeed a modern hostelry in this section of the country which has not put up the immortal George for at least 1 night. It would appear that G. W. spent a great deal of his time going about the country doing 1-night stunts at the various caravansaries within 100 miles of Philadelphia in all directions. There are so many of them that he could not possibly have stayed more than 1 night in each and attend to his presidential duties at the capital. What a boon an 18-horsepower automobile like ours would have been to George in those days! All our ancient highways would now be dotted with roadside pumps labeled: "Here G. W. stopped and filled his radiator," with roadside stores bearing the legend: "G. W. bought 1 gallon of gasoline here on June 16, 1779," etc. Besides, with an automobile George could have seen to it that not one of the inn-keeping gentry was overlooked—not only near Philadelphia,

but along the entire coast from Portland to Jacksonville.

That wire nail had cost so much time that the shades of night were falling fast as through Tohickon park they passed. The park is laid out on the banks of the same picturesque Tohickon, which they passed early in the afternoon at Point Pleasant,



BRIDGE ACROSS THE NESHAMING AT RUSH VALLEY

where it empties into the Delaware. They hurried on to Pipersville, 35 miles from home, where the driver decided to make a lasting job of the tire. This would take some time and as the culinary ability of the cook there had been piped off to the camera man some time before, and all hands had full-fledged automobile appetites, it was decided to give the Pipersville boniface an opportunity to make god. That he didn't was the consensus of opinion after the travelers had all been tucked in and were bowling down the pike Philadelphiaward under the mellow beams of three-parts-full Luna. It was almost ideal.

A word on the meal problem. It's getting to be a serious thing—this taking the say-so of somebody who heard somebody else tell Jones that he heard Smith say that the Bungtown hotel puts up good fodder. It ought to be more definite. The national governing body of automobilists should make it its business to inquire into the merits of and select official hostelries in various sections of the country. Some bucolic innkeepers are prone to clap on a 50 or 75 per cent increase on automobilists on the theory that anyone wealthy enough to travel in a motor vehicle has money to burn.

What with the headlights and the rays of the moon there was nothing to prevent the driver from burning up the road with as much confidence as if it had been mid-day. And he did. There were no coppers to fear—just yet, for the motorists were still in Bucks county—and they fairly flew up hill and down dale, through Plumsteadville, Danboro and Dyerstown, slowing up as they reached Doylestown—doing 11 miles in about 25 minutes. Then swinging into the Doylestown pike they kept on without a stop—keeping a good lookout meanwhile at bridges for the trolley cars, which ran at the side of the road. These bridges are in almost every instance several feet narrower than the road, and as the trolley tracks cover fully half the space on all of them, careful work is necessary on the part of automobilists, especially at night.

At Bridge Point they cross the Big Neshaming, an Indian name meaning "two streams making one," and 4 miles farther along pass over the Little Neshaming gleaming in the moonlight like a silver ribbon. Then follows quaint and quiet Horsham, with its quaker meeting house gleaming among the trees back from the road, and in a few minutes more they slid down the hill into Willow Grove, which at this time of the year gives little evidence of the fact that in the summer season it is one of the most popular suburban pleasure resorts in the country.

No better idea of the power of money, judiciously expended, to change a landscape, can be had anywhere in this country than at Willow Grove. Ten years ago it was lonely farm land, but blessed with a god location. The Philadelphia Rapid Transit Co. saw the possibilities, spent \$100,000 in transforming the corn and grain-fields into a pleasure park, where the world's famous bands and orchestras may be heard during the summer months, and now nearly 10,000,000 fares are collected during each season by the transportation companies in getting crowds to and from Willow Grove.

Now they were on the old York road—with its toll-gates and its ambushes—and careful driving was necessary. The route is well lighted now all the way into town, not alone by fair Luna, but by hundreds of electric lights as well. So on they went through Abington, coasting down the long hill to Noble, then up again to Jenkintown, and down and up, down and up again, past Ogontz, where they crossed the present road on the outward journey in the morning, Milestown and Branchtown, under the Reading bridge at Logan and then out into Broad street, where the asphalt seemed unusually smooth after more than a 100-mile journey over all sorts of roads. One of the joys of making this trip at such a time is that one imagines he is getting the best of Jack Frost and encroaching on old winter's preserves. But it is an ideal tour and one that can be enjoyed in fall weather.



A PICTURESQUE PICNIC SPOT



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## THE CRY FOR MORE AND ITS RESULT

**M**ORE power, more speed, more seating accommodations, more length in the wheel base, more flexibility of motor control, more brake efficiency, more positive lubrication, more cooling surface in the radiators and the dozen other mores for which owners of automobiles have been crying this year are being served for the coming season by most of the big motor car builders. The maker who does not include such in the sum total of his 1906 machine will find his stands at the coming exhibitions somewhat deserted, whereas his competitors' spaces will be the magnets of the show. The craving for excellence and supremacy in the mind of man is so dominant that in his selection of a motor car only the best and the one coming closest to his conception of a perfect machine will suffice. The automobile builder is wise in giving what is desired, providing those wants are in harmony with accepted engineering principles.

But why more power and more speed when rural municipalities are insisting on lower speed limits and city authorities are urging the police to enforce speed regulations, to say nothing of their contemplating new and more binding ordinances? Why guarantee every machine to travel 60 miles an hour on average roads when the law says 20 is enough? Why increase cylinder capacity in order to make racing monsters out of the pleasure cars?

The answer to all is—satisfaction. With most owners it is not what they want the machine to do during ordinary travels, but what it can do when an emergency arises and power—perchance speed, too—is needed. The athlete does not require the maximum muscular development for football practice, but the maximum is frequently not sufficient when the final match with a dangerous competitor comes. The ordinary horse can trot along with the fastest track king on the park drives, but is hopelessly vanquished in the race.

So the pleasure automobile, although not designed to make records on the beach, must have ample power for the steepest hill, the muddiest road and the deepest sand. The strength of a chain is measured by its weakest link and the value of the motor car, not by what it can do on the boulevard, but what it can do on the poor country road, on the muddy hill, or through continuous miles of sand. It is for the fulfillment of these requirements that the owner has raised his ceaseless cry of "more," which he will continue to utter

until a machine is produced that can truthfully be termed a perfect machine in the worst weather and on the worst roads.

The cry has not been raised in order to turn the highways into race tracks—though some may use them for such purposes—but to secure a machine capable of successfully negotiating any road encountered, in the east, the west, the north or the south, without injury to itself when traveling under full load.

The majority of the cries for more have been heeded. Tonneau capacity is now placed at five instead of three; instead of additional hinged seats, permanent revolving or lift seats with comfortable back supports are provided. Not the least interesting point in this connection is that the latter do not interfere with the entrance or in any manner crowd the passengers. This increased seating has resulted in a car in which the owner, his friends and the chauffeur can travel in comfort.

Greater wheel base has been served scantily by many builders for next year. The present average of from 100 to 108 inches has proved sufficient for general use on American roads. This length seems

## MR. MUNSEY'S OBSERVATIONS IN EUROPE

**F**RANK A. MUNSEY, the magazine publisher, visited Europe and studied the effects the motor car is producing on the continent. He found that France, where the roads are like boulevards, attracts tourists from all over the continent and from America.

He found the way to see Europe is by means of the automobile, not alone because of the good roads, but from the point of independence, convenience, speed, and other advantages which the motor car offers. He found also that many Americans of wealth go to Europe and purchase cars there, rather than ship American cars abroad. He found that Americans spend fortunes each year in automobiling—for cars, for supplies, for hotel accommodations, and for other necessities, to say nothing of luxuries.

Mr. Munsey knows what American roads are—he has told in his magazine what they are—and, knowing the American roads, he has taken the trouble to ascertain what the effect would be were America to have roads such as Napoleon built in France. He found that hundreds of Americans who now pass several months each year in France touring,

sufficient to give easy riding over ordinary surfaces at high speed, at the same time giving liberal access to the rear seat. The longer wheel bases, ranging between 110 and 120 inches, are used extensively abroad, but it must be remembered that the billiard table roads of France and England are more suited to such measurements than the ordinary American turnpike. Excessive wheel bases besides calling for greater skill in car control require additional weight, each pound of which adds its quota in tire expense and fuel supply, as well as a general strain on the machine.

Brake efficiency cannot be overestimated. Readers of MOTOR AGE are familiar with incidents occurring resulting in serious accidents where emergency brakes have failed to work. It is in guarding against such repetitions and making the car capable of traveling the hilliest parts of the land that this increase has been made, and few points of improvement are more welcomed. If automobile drivers will accustom themselves to more frequent use of the emergency brakes the loss of presence of mind, when cool judgment is demanded will be less frequent and accidents oftener avoided.

Tire diameters are slightly on the increase, particularly those fitted to medium powered machines, whereas with the biggest touring machines this year's measurements, in most cases, remain in spite of the additional power and weight included. There is a reason for this. Tire makers are improving the quality of materials and the methods of manufacture, thereby making the 4 or 5-inch tire for 1906 capable of withstanding greater service than the 1905 tires of similar diameter.

All in all, the cry for more on the part of the owner is justified and it is complimentary to American builders that the cry has been heeded. May the things that are added not be abused; they will be needed, and then and only then will their full value be appreciated.

and who have bought motor cars of foreign make, would stay at home and buy American cars and tour America if America had good roads.

He found that the vast sums of money that go to the makers of automobiles, to the railroads, to the hotelkeepers, to the servants, to the shopkeepers, to the cabmen and to sundry other people in France, amounting in the aggregate to millions, would stay in America and be of benefit to Americans.

All of which illustrates the necessity for the railroads, the hotelkeepers, the resort people, the newspapers and the motor car manufacturers of this country banding together to help along a good cause—good for the pocketbook, good for the reputation of the country, good for the farmer, good for prosperity and good for American citizenship.

Mr. Munsey is not interested in the sale of automobiles, but he is far-seeing enough to realize that it will pay to keep Americans at home and to turn the money now sent to Europe each year into the building of a road system in our own country and in the purchase of automobiles made in America and by Americans.



It might be suggested to some people that it is the hit goose that flutters.

✻ ✻  
If the Florida meet is not a success it will not be because of a lack of cars, if press agents' words can be relied upon.

✻ ✻  
That man Pennington reminds one of the sun in winter—he gets around in the automobile game once in a while.

✻ ✻  
There has been so much talk about 1906 cars that when January 1 comes look out the new year is not called 1907.

✻ ✻  
Nobody ever seriously supposed the French meant what they said about giving up running the Bennett or Vanderbilt road races. The whole story was too much of a joke to be true.

✻ ✻  
While some makers are apparently dropping prices, others are boosting them; while some claim to never have made a cent, others are declaring dividends. Now the public can figure it out any way it likes and with almost any degree of satisfaction.

✻ ✻  
Iowa is coming to the front for good roads. The Fayette County Agricultural Society has decided to offer prizes for the best kept ½-mile stretches of roads in the county during 1906. The agricultural societies are setting an example even for the automobilists. It is 2 to 1 that the Fayette county farmers are not motorphobists.

## The Week

Independents' tire company, the Ajax Standard Rubber Co., already organized, the plant to be at foot of East One Hundred and Sixth street, New York; Horace de Lisser, organizer.

Annual French show opens, President Loubet making tour of inspection; Italy makes impression with its exhibit; Germany unevenly represented.

Congressman Morrell, of Pennsylvania, introduces bill into house of representatives which seeks to compel tourists to take out federal licenses.

Vandals strew nails on course on last day of French runabout test, making it impossible to immediately pick winner.

Pyrenees cup is stolen from de Dietrich exhibit on last day of Olympia show; no trace of it to be had.

Maxwell-Briscoe company announces location of its western factory at Grand Crossing, a Chicago suburb.

Case of New York Automobile Co. against H. H. Franklin Mfg. Co. decided in favor of latter.

Official returns give week's attendance at recent Olympia show at 129,372, more than spring exhibition had.

Automobile Club of France decides to adopt suggestion of Marquis de Dion for a European tour.

T. C. Whitcomb comes into fold and successful show at Cleveland is assured.

Percy Megargel covers worst part of the Great American desert.

Nowadays in the automobile business father and all the other members of the family are working.

✻ ✻  
The loss of the Pyrenees cup by theft was too much even for somebody to suggest that it was taken for advertising effects.

✻ ✻  
While announcement has been made of the route for the Glidden tour for 1906 nobody has heard much of a howl about any Chicago-St. Paul tour.

✻ ✻  
The fellow who has just made a machine to travel on land, water or ice, overlooked a bet by not making it capable of doing a little act among the clouds.

✻ ✻  
If the motorist buys one each of all the new things he sees at the forthcoming shows he will have to secure two or three extra automobiles to carry around the goods.

✻ ✻  
Even if Congressman Morrell's bill to provide for federal control of automobiles is defeated there will be some consolation in the fact that the government has taken notice of the motor car, which it never has heretofore.

✻ ✻  
Is it to be supposed that the success of the licensed or the independent show in New York depends upon which secures the patronage of the four hundred? The four hundred did not save the Salon des Importateurs, however.

## RISE, YE MOTORING HOSTS, AND FIGHT

AT LAST the federal government is to take up the automobile in the matter of regulations, Congressman Morrell, of Pennsylvania having introduced a bill providing that the interstate commerce commission be empowered to examine drivers of automobiles and issue licenses to those who wish to travel in different states.

The worst part of the bill, outside of the fact that it is rank class legislation, is that each operator of an automobile must pay a fee of \$50 for each 3 years, the term for which a license is proposed to be issued if he tours any.

If there is anything that will effectually kill off touring, and consequently the work for good roads, it will be the passage of such a bill. If the automobile associations, the clubs, and motorists in general permit this bill to become a law by being passed by the house and senate and to be signed by the president, they alone will be the sufferers and will have nobody to blame but themselves.

This, too, is something over which the manufacturers and the manufacturers' as-

sociations can well afford to assert themselves—it must not be passed!

A year or so ago Congressman Grosvenor, of Ohio, sought to have all classes of motorboats from the dinky little 15-footer gasoline craft to the sea-going ship brought under federal inspection and license. It was a dangerous thing for the motor boat men and the motor boat makers. Not a single motor boat maker shirked his duty; he went out to kill this proposed legislation and killed it. One did not wait for the other—each got busy and constituted himself a committee to take up the matter with owners and through them with congressmen all over the country. Thousands of petitions were sent to members of congress and boat makers appeared before the committee to which the bill was referred to give the committee the information the makers knew it did not possess. The result was the bill never got past the committee.

Work to kill off this new bill should be started immediately, else inactivity will be taken to indicate that it is not objec-

tionable to the automobile fraternity and its passage may become a fact.

Outside the fact that it is rank class legislation, that the license fee is excessive and probably illegal, there is some probability such a license is in violation of state rights. It is illegal and unjust for the federal and state governments to exact license fees from nobody but the automobilists.

If this bill passes and it is held each state has the right to regulate its own automobile affairs, each and every state may exact from each automobilist who dares to enter a state a license fee, so that if an automobilist desires to tour through every state in the union he will have to have forty-four state licenses when the two new states are admitted and the federal tag as well.

Forty-five tags on a car!  
Pay a license fee of from \$75 to \$200 a year!!

This whole matter may be taken as a joke, but it is too serious on which to take chances.

## WANTS A TOURING TAX

### Representative Morrell Introduces Bill Into House Proposing Radical Legislation

Washington, D. C., Dec. 9.—Automobile tourists throughout the country will be subjected to all sorts of inconveniences if a bill to regulate the operation of automobiles and other motor vehicles between the states, introduced in congress this week by Representative Morrell, of Pennsylvania, is enacted into law. The bill, which was referred to the house committee on interstate and foreign commerce for action, provides that on and after January 1, 1907, it shall be unlawful for any person owning or operating an automobile, whether the motive power of the same be electricity, steam, gasoline, or other source of energy, to operate the same for business or pleasure along the public highways of any state, territory, or dependency of the United States, or of the District of Columbia, so as to pass from one state into another state, territory, etc., without first undergoing a special technical examination as to his ability and power to manage, control and direct automobiles with precision and safety, and obtaining a license or permit to operate automobiles between the states from the regular constituted authorities of the United States, as set out in the following section:

"That the interstate commerce commission of the United States shall have power to conduct the examination prescribed in this act, under such rules and regulations as may be required, and shall appoint a technical expert to test the personal fitness, practical ability and mechanical knowledge of any applicant, owner, or operator of any automobile or other motor vehicle as aforesaid, at such times and places as it may determine. Said technical expert shall be certified by the civil service commission of the United States to the interstate commerce commission, and shall receive a salary of \$1,200 per annum and \$4 per diem for expenses while absent from Washington in the necessary discharge of his duties."

The bill then goes on to prescribe that every owner or operator of any automobile passing a satisfactory examination before the technical expert shall be licensed by the interstate commerce commission to operate automobiles between the states and territories, District of Columbia and the states, or vice versa. Such license will be good for 3 years from the date of its issue and may not be renewed without examination. Every automobilist passing the required examination shall, before receiving his license or permit, pay into the treasury of the United States the sum of \$50. Whenever it appears that any automobilist licensed under the proposed law has been convicted on several occasions in any federal, state, or municipal court of violating the proposed law, or any state or municipal law governing automobiles, the interstate commerce commission shall, after proper notification, cancel and revoke the license of said automobilist and shall not reissue the same. Any automobilist violating the provisions of the proposed

law will be subject to a fine of not less than \$500 nor more than \$1,000, to be recovered in any district court of the United States in the district where the violation occurred. The proposed law is to take effect from and after its passage.

Thousands of automobilists throughout the country will undoubtedly rise and fight this obnoxious legislation to the last ditch. The enactment of the Morrell bill would not only cause tourists to have to pay \$50 into the government's strong box, but they would be subjected to many annoyances at the hands of the technical expert, whose rule would be supreme. Representative Morrell is going to have a pretty hard time getting his bill enacted into law, particularly as many members of congress are enthusiastic automobilists. It is class legislation of the rankest kind, Washingtonians think.

Following the lead of Representative Morrell, it is reported that State Senator Clagett will introduce a bill during the coming session of the Maryland legislature to levy a tax of \$50 on all automobiles used in Prince George county, Maryland. It is said Senator Clagett has been prompted to take this step because of the numerous complaints made by farmers in the county that their horses have been scared by passing automobilists. Washington automobilists view with alarm this new agitation to put a tax on them, as the runs to Hyattsville, Bladensburg, and other points in Prince George county are popular with them. If the Clagett bill is introduced in the legislature it will be bitterly fought, not only by the automobilists of Washington and Maryland, but by the hotel and business men of the county, who think such a measure would be a step in the direction of retarding progress.

### QUAKER DATES NAMED

Philadelphia, Pa., Dec. 11.—At the annual meeting of the Philadelphia Automobile Trade Association, at the Hotel Hanover, the following officers were elected to serve during the next year: President, A. E. Maltby, Winton; vice-president, Gilbert S. Smith, Motor Shop; secretary and treasurer, I. J. Morse, Locomobile. The board of directors will consist of the foregoing officials and W. F. Smith, Rambler, and Daniel Cohen, Reo. Besides the annual election the main business of the meeting was the selection of the date for the annual show, which will be held in the south pavilion of the national export exposition, in West Philadelphia, February 24 to March 3. The managership of the show was accepted by Chester I. Campbell, of Boston.

### MAXWELL CHICAGO PLANT

New York, Dec. 12.—The Maxwell-Briscoe Motor Co., of Tarrytown, has made its announcement regarding its Chicago plant. The company states it has secured a building which will give 60,000 square feet of floor space. It runs from Seventy-third to Seventy-fourth streets at Grand Crossing. The new plant will have a capacity of 1,500 machines. The method of the Maxwell-Briscoe company will be to ship the parts from its eastern factories at Tarrytown and Pawtucket and have them assembled for the western trade at Chicago. The move was made on account of the heavy railroad rates.

## VANDALS SPOIL A TEST

### Nails Sprinkled Along Route of French Runabout Trials Delay Naming Winner

Paris, Dec. 1.—Contestants who took part in the runabout test organized by L'Auto will have to wait several days before they find out who won the event. On the final day's run vandals scattered tacks and bent nails over the course and so many punctures resulted that the test was stopped at Mantes with many of the machines on flat tires. The officials then decided to appeal to the Automobile Club of France and are now awaiting the decision of the committee which has taken the matter in charge.

When the Automobile Club of France has been consulted the final awards will be made. If the final day's part run is not ruled out of the contest victory will rest with Barriaux, in a Vulpes, who finished first in spite of five punctures. If the final day is ruled out, Gachet and his Lacoste-Battmann, leading the seven contestants at the end of the fifth day, will be the winner of the event.

The 5 days finished without any reversals in form except one—that of Renonce in his Gregoire, whose tires punctured on the morning of the semi-final day of the run and gave him so much trouble throughout the day that he reached the goal with 350 points penalization against him. The handicap was too great for him to overcome, although he had completed 4 days without a black mark against him.

On the final day's run nine contestants started, but owing to the road being sprinkled with nails every tire was punctured and several of the machines dragged into Mantes hours late, with all the tires flat.

The 770 miles of the course were practically covered in remarkable time by the little machines when the horsepower, weather and other details are taken into consideration. Seldom is a car equal to 6 days' consecutive traveling over muddy and snow-covered roads, 75 miles each day, without a break or serious mishap. The cars were put into an enclosure each evening after the run and only absolutely necessary repairs were allowed to be made by the drivers. No cleaning of engines or other work tending to make the next day's run easier was permitted.

Awaiting the decision of the A. C. F. the standing in the test is as follows:

Final day counted: 1, Barriaux, Vulpes; 2, Lionel de Dion, de Dion; 3, Cormier, de Dion; 4, Gachet, Lacoste-Battmann; 5, Bardin, de Dion; 6, Taveneaux, Grégoire; 7, Rochay, Lacoste-Battmann; 8, Thomas, Lacoste-Battmann; 9, Renoncé, Grégoire.

Final day not counted: 1, Gachet, Lacoste-Battmann; 2, Cormier, de Dion; 3, Barriaux, Vulpes; 4, Lionel de Dion, de Dion; 5, Bardin, de Dion; 6, Thomas, Lacoste-Battmann; 7, Taveneaux, Grégoire; 8, Rochay, Lacoste-Battmann; 9, Renoncé, Grégoire.

On Monday last the speed trials were held at Chanteloup. These consisted of a 1 kilometer flying start on the level, a kilometer flying start uphill, and a standing, starting,

and stopping test of 500 meters. In the flying kilometer L. de Dion made the best time, being clocked in 1 minute 40 seconds. In the flying start, uphill, kilometer, it was Barriaux, in a Vulpes, who carried off the honors in 4 minutes 5½ seconds. Gachet, in a Lacoste and Battmann, starred in the 500 meters standing start and stop, doing the stunt in 57½ seconds. In the final summing up, each competitor being penalized one point for every ¼ second over the best time in each trial, L. de Dion was first, with 86 points' penalization. Gachet was second, with 127; Barriaux third with 176, Cormier fourth with 209, Bardin fifth with 366, Thomas sixth with 437, Rochay seventh with 488, Tavenaux eighth with 844, and Renonce ninth with 1,307.

The Automobile Club of France has decided to adopt the suggestion of the Marquis de Dion which was first noted at the close of the last Bennett race. This was to substitute for racing events a grand continental tour which would form a great reliability contest. The provisional conditions which have been issued, state that the course will be of something over 3,100 miles, mapped out to include portions of France, Belgium, Germany, Austria and Italy. The halting places will be made, more or less, the scenes of public exhibitions of the competing cars and a general sort of international fraternization. The jury to decide the awards at the finish is to be made up of an international selection of judges nominated by the competing clubs. Each stage is to consist of from 186 to 248 miles per day. There are to be four classes of competitors, each of which will be judged distinctly and separately. These classes are distinguished by weight of body, seating capacity and total diameter of cylinders. The lowest class is intended to comprise vehicles capable of maintaining an 18-mile per hour average speed, and the total piston area of the engine must not be greater than 86.59 square centimeters—which in the case of a single-cylinder car would be equivalent to a bore of 7.4 inches. This car must have a two-seated body, weighing not less than 1,651 pounds.

The second class is supposed to be able to maintain an average speed of 22 miles per hour, and the piston area is limited to 226.19 square centimeters, which might represent a two-cylinder car of 4½-inch bore; a double phaeton body must be fitted here weighing not less than 440 pounds. The third class is supposed to run at a speed of 25 miles per hour. The piston surface is limited to 346.36 square centimeters, or equal to a four-cylinder engine with a bore of 4½ inches. The body weight, three seats being insisted upon, must weigh not less than 825 pounds. The fourth and highest class of all, is supposed to be able to maintain an average speed of 28 miles per hour, piston area in this case to be limited to 430.92 square centimeters, or equal to a four-cylinder engine of about 5½-inch bore. A six-seated limousine is insisted upon, the total weight of which must be not less than 1,116 pounds.

It is said at present that the automobile clubs of Germany, Italy and Austria are favorably disposed, and will take part in this grand tour of Europe.

## BIG GATE AT OLYMPIA

### Figures Show That 129,372 People Attended Recent English Show—Pyrenees Cup Stolen

London, Nov. 30—Aftermath of the recent Olympia show demonstrates that in point of attendance at any rate the late exhibition exceeded any previous affair of its kind ever held in England, the official figures on the attendance claiming 129,372 for the 6 days, a mark which far exceeds the Chicago show of last winter, when 103,000 people were said to have passed through the gates. Chicago, too, had 7 days—one more than Olympia, but zero weather offset this advantage. This 129,372 also exceeds the gate at the show held in Olympia hall last February, when 125,272 people were checked in. As was the case at the last affair, the attendance on Wednesday was the largest, being 25,404 as compared with 23,112 of the first show. Following is a table showing the attendance at this and the previous show:

	Second 1905 show	First 1905 show
Monday .....	18,532	16,846
Tuesday .....	20,578	20,216
Wednesday .....	25,404	23,112
Thursday .....	18,240	20,734
Friday .....	21,568	21,484
Saturday .....	25,000	22,880
Totals .....	129,372	125,272

Statisticians, too, have been at work on the value census of all cars, chassis, etc., at Olympia and the figures of H. Hewitt Griffin indicate that the last show total was beaten only by a narrow margin. The average car value was just a shade over \$3,000 and nine countries exhibited, the British-made goods representing 55.177 per cent as compared with 44.823 per cent of all the others combined. England, of course, ranks first with cars valued at \$756,985. France was next with \$403,510. Germany was third with \$114,175, Scotland fourth with \$76,750, Belgium was fifth with \$47,250, America sixth with \$41,825, Italy seventh with \$41,720, Switzerland eighth with \$24,500 and Holland ninth and last with \$6,300. As compared with the previous show, the late exhibition only had \$16,9150 more.

The Pyrenees cup, the trophy won by M. Sorel in France's big tour last August and valued at \$5,000, was stolen the last day of the Olympia show and so far no trace of the massive silver affair has been discovered. It is feared the thieves have melted it up, which will make it necessary for the de Dietrich company to replace it, as it was a challenge cup which was exhibited at the de Dietrich stand by Charles Jarrott & Letts, who have offered \$250 for information leading to its recovery. The trophy represented an allegorical figure seated in a car, with the right hand resting on the steering wheel. It measured 2½ feet in length and was about 2 feet high. The robbery is thought to have occurred early in the morning. A night watchman who had been engaged especially to guard the cup absented himself a few minutes and when he returned the cup was gone. The theory is that the trophy was smuggled out of the building

in sacks carrying the litter swept up by the cleaners. As the trophy was so big that one man would have all he wanted to do to carry it, the mystery is only intensified. It was thought possible that the cup might be smuggled across the channel, so all the boats were watched, but the thieves were clever enough to stay in London until the hue and cry died down.

### AIMS OF CREDIT ASSOCIATION

New York, Dec. 9—Secretary Franz Neilson, of the recently organized Automobile Trade Credit Association, formed for coöperative collection, protection and detection, with some sixty representative firms on its books, has sent out to members and prospective members a brief outline of what the association has done. He announces the election of seven directors as follows: F. J. Alvin, manager American Electrical Novelty & Mfg. Co., New York; L. C. Burnet, Truffault-Hartford Suspension Co., New York; E. J. Willis, president E. J. Willis & Co., New York; George W. Nock, individual dealer, Philadelphia; James E. Murray, manager New York Sporting Goods Co., New York; L. L. Hale, Sibley & Pitman, New York; Carl Kaufman, treasurer Motor Car Equipment Co., New York; Harry B. Mirick, treasurer National Electric Supply Co., Washington, D. C. Immediately following the general meetings the board of directors convened and elected F. J. Alvin president of the association, L. C. Burnet treasurer and Franz Neilson secretary and counsel. The election of four vice-presidents was temporarily deferred.

"Briefly outlined," says Secretary Neilson, "the by-laws provide that the association shall aid in the collection of accounts, collect and disseminate information concerning the standing of customers, protect against unjust and unlawful claims and exactions, settle differences between its members and between members and customers and promote a more cordial feeling between those engaged in the trade."

### SHOW PEACE AT CLEVELAND

Cleveland, O., Dec. 11—All chances of any interference with the proposed local show of the Cleveland Automobile Dealers' Association by T. C. Whitcomb, the independent dealer who held an option on Central armory and who threatened to hold a show of his own, have entirely disappeared. The dealers and Mr. Whitcomb have patched up differences and he has joined the association and will help boom the show. This not only brings in his large line, but those of several other dealers who have been outside the ranks of the association and who have been holding off to see what Whitcomb would do. With peace in the ranks, the dealers are now working to make this the biggest local show ever held and the prospects of carrying out this plan look most encouraging. The ground floor space at the Central armory is much larger than at the old Gray's armory where previous shows have been held, and in addition it is the intention to utilize the balcony which has never been possible at Gray's armory. Material and supply dealers will have the balcony spaces, while the ground floor will be devoted to automobiles.

## IS NOW IN THE DESERT

### Percy Megargel Tackles Herculean Task of Crossing Great American Wastes in Motor Car

Needles, Cal., Dec. 13.—Special telegram—The Reo Mountaineer has now crossed the worst part of the desert and is headed for home. We ran out of gasoline at Peach Springs, and before a supply could be secured a loss of 24 hours had been occasioned.—PERCY F. MEGARGEL.

San Bernardino, Cal., Dec. 6.—After a week of the most careful inquiry, during which time I have been in almost constant consultation with ranchmen, railroaders and automobilists, I have decided to tackle the Great American desert, or such portions of it as lay alongside the tracks of the Santa Fe railroad, with an occasional cut off. It is a comparatively easy matter to follow a route that someone else has laid out and swear at the party who laid it out if things are not as easy as pictured, but it is quite another matter to lay out your own route over a country never traveled by automobile.

Pretty nearly everyone with whom I talk say it is out of the question to attempt to drive a motor car across the Great American desert, as even wagons and horses find it impassable. We may be obliged to turn back and await spring before we cross the Sierra Nevadas in northern California, but I have great hopes of the Reo Mountaineer again doing the supposed impossible and carry Fassett and myself across the desert sands, so long the terror of automobilists.

In addition to my sand tires I have added two very heavy pieces of canvas, each measuring 15 by 7 feet. I have added a new and longer cable to my windlass equipment, have lightened my load by sending even my wearing apparel by express, but have clung to our sleeping blankets and have added a good 2 weeks' provisions to our grub box. Two days without food in crossing the Cascades in Oregon left an impression that will not be forgotten in a hurry.

My schedule as arranged at present calls for: Needles, Cal., December 9; Flagstaff, Ariz., December 14; Gallup, N. M., December 17; Trinidad, Colo., December 24; Tribune, Kan., December 26; Kansas City, Mo., December 30; St. Louis, Mo., January 3; Indianapolis, Ind., January 4; Columbus, O., January 5; Wheeling, W. Va., January 6; Pittsburg, Pa., January 7; Philadelphia, January 10, and New York, January 11. This would be almost record-breaking time and the chances are that the Reo Mountaineer will be several weeks behind the schedule, especially if deep snow is encountered in the high mountain passes, as must be expected at this time of the year.

This California weather is all that it is said to be. Last Sunday afternoon I went in the Pacific for a swim at Huntington beach, a few miles out of town. The water, while somewhat cool, was delicious and my swimming was not particularly disturbed by the presence of several seals which shared the ocean with the bathers

at Huntington beach. The little animals were almost tame and were not the least frightened by the presence of the surf bathers.

There are few eastern manufacturers who realize the automobile situation at Los Angeles. Here it is in the midst of winter, yet every road is in perfect condition and the motorists of this region motor 12 months in the year. Some enthusiasts do this in the east, but here the weather is like June all the year around. If manufacturers fully understood the conditions prevailing out here they would send their first 1906 models this way instead of to the eastern cities, for half the population of Los Angeles are eastern moneyed people here for the winter, and the car they like best here will undoubtedly be the car they purchase in the east.

While there are several automobile publications published in the west—one at Denver, another at San Francisco and another at Los Angeles—the circulation of MOTOR AGE appears to be general and book stores that keep only one or two automobile papers invariably include MOTOR AGE. The majority of automobilists whom I have met on the coast are perfectly familiar with every move the Reo Mountaineer has made since leaving New York last August, thanks to MOTOR AGE, while not a few followed out my adventures in the Pathfinder, as recorded last summer by Mr. Harrison, of our party. The Reo agencies especially appreciate this and frequently I find pasted up on the windows or walls of the local agency pages from MOTOR AGE, picturing out our trip across the continent.—PERCY F. MEGARGEL.

### ENGINEERS' SCHOOL OPENED

New York, Dec. 12.—The New York school of automobile engineers began its sessions for the season yesterday with day and night classes. There were fifty-four students on the books at the beginning of the year. The school is located at 146 West Fifty-sixth street. In addition to the regular engineers' class, day and night sections, an owners' class opened today. The night students will have 3 hours of instruction, and their session will last 15 weeks, while the day students, having 8 hours' a day, will complete the required course in 8 weeks. Only 6 weeks, however, will be spent in the class rooms, for it is proposed to devote the fifth week to practical work with the car. Professor C. E. Lucke, of Columbia university, the director of the school, has outlined the method of instruction under ten general heads. They are: Classroom instruction by lectures and recitation; instruction on emergency repairs in a shop; transmission of power changes and tire repairs; ignition systems, including all jump and touch sparks; testing of fuel oils and lamp materials; work on engines and power generators; instruction on a complete machine set on rollers so that operators may be taught to control the machine easily; instruction in taking apart a complete machine and putting it together; track work with a car where all steering and control problems will be encountered; road instruction, both by day and night. Great enthusiasm is being displayed in motoring circles over this school, which has attracted a particularly bright looking lot of students.

## CALL IT A GOLD MINE

### English Promoters Point Out Money-Making Possibilities of London Cab Service

London, Dec. 2.—Two more public motor vehicle prospectuses are out this morning representing in all an appeal for nearly \$1,000,000. In one, the proposal is to place twenty cabs on the streets of London, fitted with four-cylinder 20-horsepower engines, with an epicyclic type of speed gear and landaulet body. The only inducement offered to the public to subscribe to this undertaking is an estimate of the profits. It is shown that each cab may be expected to produce \$50 per week net earnings. Against this depreciation is set down at 20 percent. The manufacturers of the cabs have agreed to maintain them in proper running order and condition for an inclusive charge of \$500 per cab per annum; the tire contractors—who appear to be the well-known Continental Tire Co. of Hanover—have similarly agreed for a period of 5 years to keep the tires in full repair for \$225 per annum. Gasoline, lubrication, etc., are set down at \$285, drivers and cleaners \$465, and insurance against loss of profits through temporary disablement of car, \$145 per cab per annum. These last three items therefore are the only fluctuating charges and amount to \$179 per cab. This would show a net profit of \$895 per cab per annum, and of course it is only necessary to perform the usual multiplication of cabs to secure boundless wealth. The names of the directors do not include anybody connected with the motor business, but it is said that the money is practically underwritten, and that the Ford Motor Co. is the particular firm which has secured the contract for these vehicles.

The other is a somewhat similar appeal, but the engines in this instance are to be fitted to the Unic car, which is practically a Georges-Richard chassis sold in this country under the title of the Unic. The estimate of the running of 100 cabs for a year is put down at \$185 per cab, tires at \$250 per cab, insurance at \$60 per cab, maintenance at \$250 per cab; depreciation is put down at about 17 per cent and other charges would total up to \$150 per cab, which would mean an estimated outlay of \$1135 per vehicle, against which it is expected that the cabs will each earn \$2625 per year with a cost in driver's wages of \$655. The usual mathematical calculation will again result in dividends sufficient to allure the most exacting.

### FRANKLIN WINS CASE

Syracuse, N. Y., Dec. 11.—Supreme Court Justice William S. Andrews Saturday decided the suit in the New York Automobile Co., which was brought against the H. H. Franklin Mfg. Co., of this city, in favor of the Franklin company. The New York Automobile Co., which was composed of A. R. Peck, E. I. White and other Syracuse capitalists, brought an action against the Franklin company to recover \$100,000, alleging that the latter concern had hired its engineer and stolen the models of a four-cylinder air-cooled motor which they

had paid their engineer, John Wilkinson, to develop. Justice Scripture, before whom the suit was originally brought, granted an injunction prohibiting the Franklin company from paying any dividends until the suit was decided. The title of the action was the New York Automobile Co. against Herbert H. Franklin, Alexander T. Brown, John Wilkinson and the H. H. Franklin Mfg. Co. Justice Andrews, in a carefully prepared opinion, goes into the matter from the start. The plaintiffs asked that the defendants be enjoined from making and selling an automobile and from using any of the designs and inventions of John Wilkinson. On this Judge Andrews said:

"No such relief as asked in this action can be granted. Mr. Wilkinson as an employee of the plaintiff had, under the circumstances, a right to leave its service when he did. Concededly he had no right to take with him any of its tangible property such as the model, the patterns, the drawings; and he did not. Possibly he had no right to use any designs which he might remember; and this he did not do. But he, as well as everyone else, had a right to plan and use a four-cylinder air-cooling engine. His experience, his skill, his unmaturing thoughts and designs were his own. That they had been gained at the expense of the plaintiff certainly gave the latter no legal right to them. If it had possessed any unpublished inventions which Mr. Wilkinson was not using, another question would arise. But it had not. All it possessed on June 30 was an unperfected model of an engine and this it still has."

#### EXHIBIT OF AIR SHIPS

New York, Dec. 12—The announcement by the Automobile Club of America that the Sixty-ninth Regiment armory will have an exhibition of balloons and flying machines has caused some excitement. Opinions vary as to the advisability of the club's branching out in the line of aerial navigation. In some quarters the news evokes only ridicule, while others are inclined to believe that the move is a good one. The exhibit is to be arranged under the direction of the recently formed Aero Club of America, which is practically an offshoot of the Automobile Club of America. The entire gymnasium of the armory, with a floor area of nearly 5,000 square feet, is to be devoted to aeronautic vessels. There will be balloons, aeroplanes, box kites and other forms of air ships, including the models of the most famous air vessels of Europe and America. Models of ships driven by Santos-Dumont, Roy Knabenshue and other successful aeronauts already are assured. Various types of motors suitable for air travel also will be exhibited.

#### MAY RIVAL VANDERBILT

New York, Dec. 12—Indications are that the 200-mile Cuban road race will be a rival to the Vanderbilt affair, for such drivers as Albert Clement, Walter White, Walter Christie, Sisz, Jenatzy, Fletcher, and Earp are expected to compete, to say nothing of other foreign and American speed merchants. Senator Morgan has about completed his plans for the Cuban invasion, the appropriation of \$5,000 by the Havana council settling all doubts of the race.

## LARGEST SHOW OF ALL

### Paris Salon Opens and President Loubet Inspects Leading Makes—Some Features

New York, Dec. 13—Special telegram—Mail accounts of the opening of the French automobile show last Friday in the Grand Palais, Paris, are just at hand and only bear out the expectations of those who have been fortunate enough to have attended previous affairs in the French metropolis—that it is the greatest exhibition of automobiles and accessories ever promoted—a mart where maker, designer and owner meet on an equal footing to see the very latest in automobile fashions.

The exhibition was opened in the usual manner by President Loubet, who makes it a custom to travel the circuit of the show each year and see for himself just what progress his countrymen have made in the manufacture of automobiles.

This time the president of France was hauled to the show in a horse-drawn vehicle and he made a bee-line for the Richard-Brasier stand, where Brasier and They were holding court. The president handed out a few lines of jolly to the two motoring celebrities, inspected the car that won the Bennett cup, then resumed his tour, stopping at the Delahaye, Renault, Gobron, Panhard, Bollee, Fiat and Darracq booths. This done the president astonished everyone by expressing a desire to inspect the Mercedes. This took him into German territory and he chinned away with M. Charley until that individual was grinning with as much glee as he would have shown if he had been given half a dozen crosses of the Legion of Honor. From the show proper President Loubet went through the motor boat section in the Serres de la Ville.

As for the show itself, the reports say that one was impressed by the similarity of design in all the leading makes, the Mercedes type being so popular that it was a task indeed to distinguish the make of a car unless one could get a front view and tell by the radiator. Italy was a most important factor in the show, the enterprise shown by its manufacturers, the many mechanical features of its cars and especially the success of the Fiat and Itala in the road races of the past summer forcing France to shove over and allow its rival room on the throne. This was in marked contrast to Germany, which was unevenly represented. Of course the Mercedes was the cynosure of all eyes, but the other makes from the fatherland, being comparatively unknown, were not much in evidence.

Italy's ideas—some of them—have evidently been grabbed by its rivals. The large-sized radiators and capacious pumps first prominent on cars of Italian manufacture, were noticed on other makes. All makers have evidently given the subject of lubrication considerable thought and study, for on all sides were seen the force-feed system with a positive mechanical drive. Among the recent converts to this way of thinking are the Mercedes people, who now employ a mechanical pump for the distribution of oil. Their pressure system is now only used to force the oil from the tank on the side of the chassis into the reservoirs on the dash. An-

other thing noticeable is the absence of the belt-driven pump on the leading makes.

On the new models of the Mors, Brasier, Renault and others it is noticed that automatic starting devices are used. The prize offered by Henry Deutshe for the most practical method of starting the engine from the driver's seat has evidently stirred up the inventors to the profit of the maker. President Loubet was particularly impressed with this improvement.

Automobiles were not the whole thing at the show, the display of motor boats, air ships and commercial trucks being particularly large and impressing.

#### TIRE COMPANY NOW FORMED

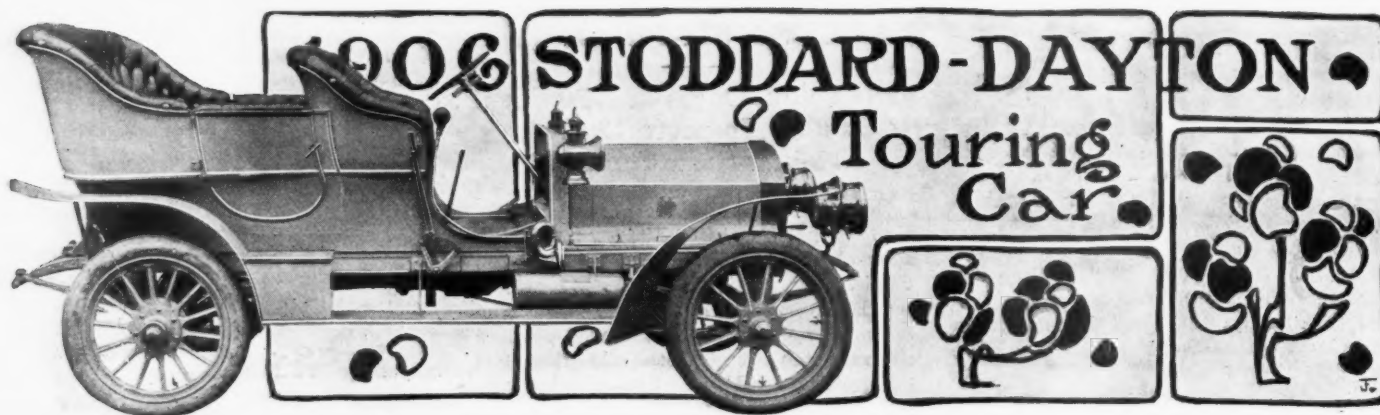
New York, Dec. 13—Special telegram—MOTOR AGE is now able and at liberty to add further and more definite particulars as to its story last week of the outline of the move of the A. M. C. M. A. to secure exclusively to its members a supply of tires outside of the pool, form a company, in which its members should have a chance to become stockholders and so practically secure rebates on the present tire price, which is to be maintained.

The company in question, the Ajax Standard Rubber Co., has already been formed with a capital stock of \$100,000. Horace de Lissier, former sales manager of the International Automobile & Vehicle Tire Co., is the organizer and has ample financial backing outside of any stock that may be subscribed by members of the A. M. C. M. A., according to the plan outlined in last week's MOTOR AGE. A big factory has been leased at the foot of East One Hundred and Sixth street, New York, machinery is being installed and it is expected that deliveries of the finished product will begin on January 1. Already the crude rubber is being worked at a rubber plant. The making of the tires will be under the direction of the former superintendent of the International company, who knows the formula and is well acquainted with the process.

Roger B. McMullen, general manager of the A. M. C. M. A.; James Couzens, of the Ford Motor Co.; Benjamin Briscoe, of the Maxwell-Briscoe Motor Co., and A. C. Newby, of the National Motor Vehicle Co., have been actively associated with Mr. de Lissier in the promotion of this important independent project.

#### COLONEL POPE WORKING

New York, Dec. 11—Colonel Albert A. Pope's pet scheme for a New York-Chicago highway, has come to the surface again. The New York and Chicago Road Association has sent out an appeal to the public to assist in urging the completion of the national highway. The route leads from New York city up the east side of the Hudson to Rhinebeck, thence through Ulster, Delaware, Broome, Chenango, Tioga, Chemung, Allegany, Cattaraugus and Chautauqua counties to Erie, Pa., thence it follows the lake shore to Toledo, and on to Chicago. About 160 miles of the road in New York is completed; some stretches are already improved and work has been started on other portions. It is expected that this appeal sent out by the association will do a world of good, for there is great enthusiasm shown in the states along the route.



TWO four-cylinder cars, a runabout and a five-passenger touring car, comprise next year's line of the Dayton Motor Car Co., of Dayton, O. The former, not yet announced by its maker, will possess as features cylinders with  $3\frac{1}{2}$ -inch bore and stroke, three speed and reverse selective type of sliding gear, and shaft final drive. In the touring car, which will naturally take the place of this year's machine, many notable changes are introduced. The present motor with 25 horsepower, the cylinders of which have 4 by 4-inch measurement, has been replaced by one with  $4\frac{1}{2}$  by 5-inch cylinders, rated at 30 to 35 horsepower, and this year's common type of sliding gear set is replaced by one of the selective type, giving the same number of speeds, but with changes effected through a side lever instead of from the steering pillar. Timken roller bearings are used in the road wheels, transmission set, propeller shaft and rear axle, the latter being of the floating type. The general increase in size has occasioned a wheel base 7 inches longer than formerly, being now 103 inches; 32-inch wheels are still used, but the tire diameter has been increased to 4 inches; the weight of the machine is approximately 2,100 pounds.

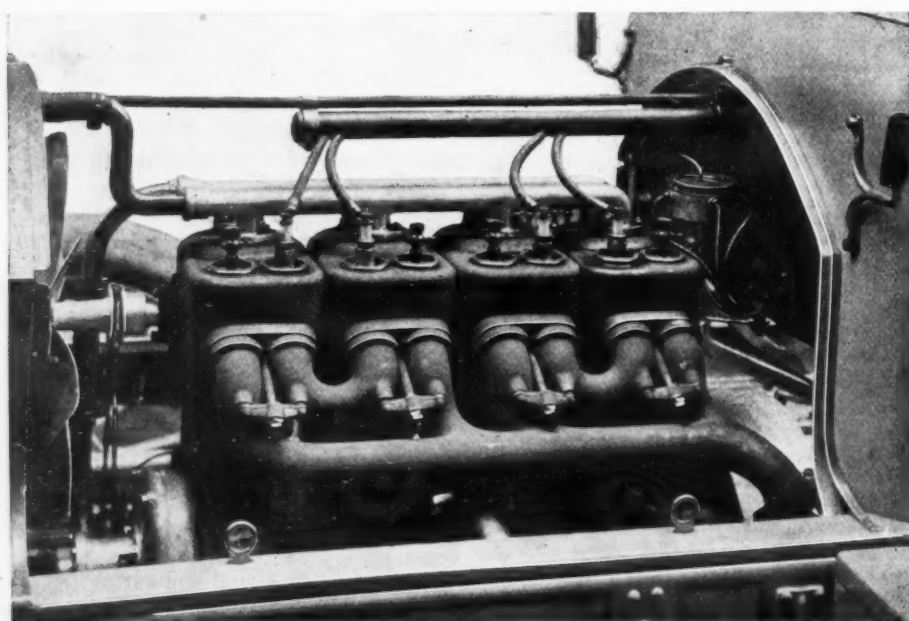
Channel steel constitutes the entire main frame and subframe. The former has its side pieces parallel throughout, car-

ries long curved Mercedes spring hangers at the rear and the usual short forged hangers in front. The subframe is made up of a pair of channel pieces slightly lower than the main pieces and carried on cross pieces in front and rear, with intermediate side braces. Gusset plates are used throughout. A spring suspension of four long semi-elliptics remains. This year the rear springs are 50 inches long and 2 inches wide and the front 40 inches in length. The former are swung outside of the frame members and at their front ends are not shackled but carried on the ends of a sleeve on a cross rod of the frame. At the back they are shackled to a rod extending across the frame through both spring hangers. As at present the front axle is of I-section with Elliott type of steering knuckles integral with it and the spring seating in the form of clips surrounding the axle and the springs clipped thereto. Case-hardened steel bushings are used in the steering knuckles.

A Rutenber motor is used, and aside from the increase in the bore and stroke few changes are noted. One is a new design for the inlet and exhaust pipes from the valves, the former now being inside the latter, permitting the Schebler carbureter being carried closer to the crankcase, as well as having the hot exhaust piping further removed from the cylinders. In connecting each set with the valve open-

ings gaskets are eliminated. The valve opening is slightly coned, as is that of the pipe, and between the two is placed a short bronze sleeve with the ends coned to fit into the valve and pipe openings. When the latter are closed together the bronze sleeve is entirely concealed between them. The pipe is held to the cylinders by yokes and bolts. Other features are the placing of the pump, shown at the left in front, slightly closer to the radiator and carrying it in a separate casing readily detachable from the motor; the carrying of the high-tension wires to the spark plugs within a tubing supported by a rod from the top of the dash to the radiator top and the conducting of a separate oil lead to the commutator casing, still carried on the top of a vertical shaft at the rear of the cylinders. A six-feed oiler is now carried on the right side of the motor and has two leads to the end crankshaft bearings and others to the crankcase. The pump is driven from the commutator shaft by an eccentric and rocker arm. Six individual pumps are used, each pump in circuit with a separate lead and adjustable so that any flow of lubricant can be had in each lead. On each piston is a wide oil groove near the bottom for distributing oil over the cylinder walls, and over the connecting rod bearings are oil cups for collecting the splash. The wrist pins are made hollow and pinned to the piston journals and in lubricating oil flows through them to the center, where oil holes connect with the bronze bushings. Babbitt on a bronze ground is used in all of the crankshaft bearings, but plain bronze is adopted in the camshaft bearings.

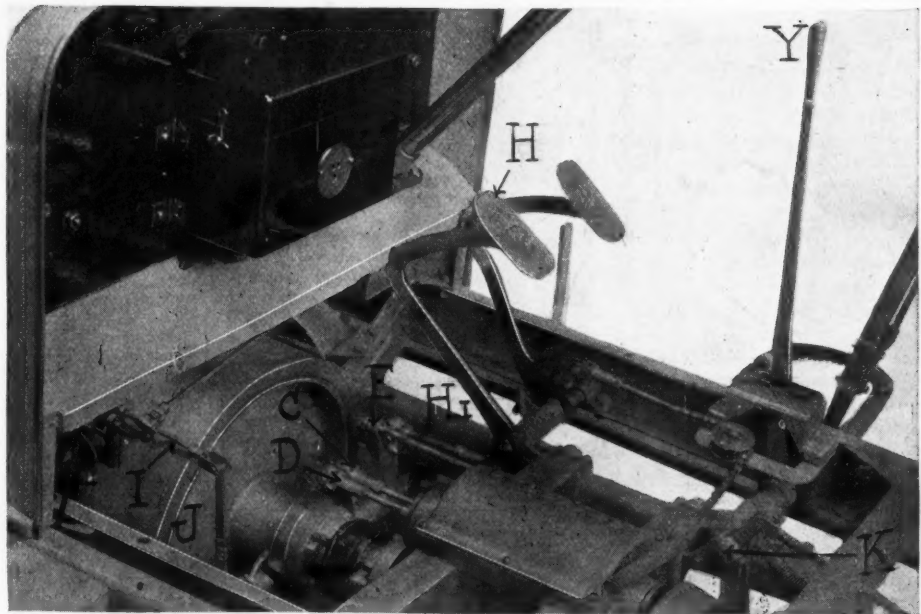
It is in the transmission of power from the motor that the real innovations in the car are encountered. The clutch remains much as it is and is of the external cone type with the flywheel B carried on an integral flange on the crankshaft and the latter with a continuation A forming a bearing for the male portion C of the clutch. This part is bolted to the clutch hub D1 bearing directly on the crankshaft continuation, serving only as a bearing, and to the hollow portion D, through which it is connected to the driveshaft M in the gear box. In retaining the clutch spring E in position the usual end-thrust ball bearings are placed behind a ring against the back end of the spring and in retaining the ring in place a hollow screw F with curved flange resting against the spring ring is used. This screw F enters the end of the crankshaft and



INLET AND EXHAUST SIDE 1906 STODDARD-DAYTON MOTOR

within it is a small screw F1 that also enters it and the crankshaft, thereby serving as a lock nut. The universal joint coupling the clutch with the gear box is novel because the clutch can be removed without dismantling the gear box or the motor. Three main parts comprise the joint. Two of these, J and K, are alike and are ring-like pieces with a flange at one end to be bolted to, in the case of one, the clutch sleeve D and in the other to the disk L on the front end of the shaft L1 in the gear box. Each piece is made with a cross slot to receive an end of the link G forming the cross of the joint, which has on either end cross parts G1 and G2, one being at right angles to the other and each made with rollers at the end. A short leather housing H encloses the only exposed portion of the joint.

In the gear box the mainshaft is in the bottom of the case and the countershaft N directly above it. Both gear case ends are bored to receive the bronze bearing cages W and in the top is a large inspection plate. Both sliding units P and Q work on the squared mainshaft M which has its forward bearing in the hollow end of the clutchshaft L1 and integral with this shaft is the gear L2 constantly in mesh with a large gear R on the countershaft, which revolves on all speeds. Gears on the countershaft are retained by double Woodruff keys placed at quarters and the gears are maintained in position by spacing tubes V between them. By using two sliding members it is not necessary to pass through gears and is further possible to drop from high speed to reverse or low speed. In driving direct the sliding gear Q made with dental clutch teeth on the forward end, is locked through similar teeth on the rear end of the clutchshaft gear L2, the drive then being along the shaft M. For all other speeds power is first carried to the countershaft through gears L2 and R and then back to the mainshaft through the pair Q and R1 on second speed, P and R2 on slow speed and through P and R3, together with the idler X, on the reverse. In shifting the two gears P and Q one lever Y, shown in the rear view of the chassis, is used. This works in a double slotted quadrant between a pair of short arms, one at its left side and the other at its right. One arm is attached to an outer sleeve and the other to an inner sleeve and the sleeves are in turn connected at their inner ends with the two sliding rods D and C, which enter the front end of the gear box. One of these rods is connected with the sliding gear Q and the other with the gear P within the case. When the lever Y is in the position shown in the gate in the quadrant, the short arms are held against it by flat springs. On each arm is a pair of lugs, one at either side of the lever Y. When the lever is pushed sideways into the inner slot it is locked with one arm and if moved to the forward position of the slot gives slow speed ahead. The back position in the slot gives the reverse. When the lever Y is in the outer slot it locks with the outer arm connecting with the sliding gear Q and when moved forward in this slot gives direct drive and second speed when moved back. The gear box

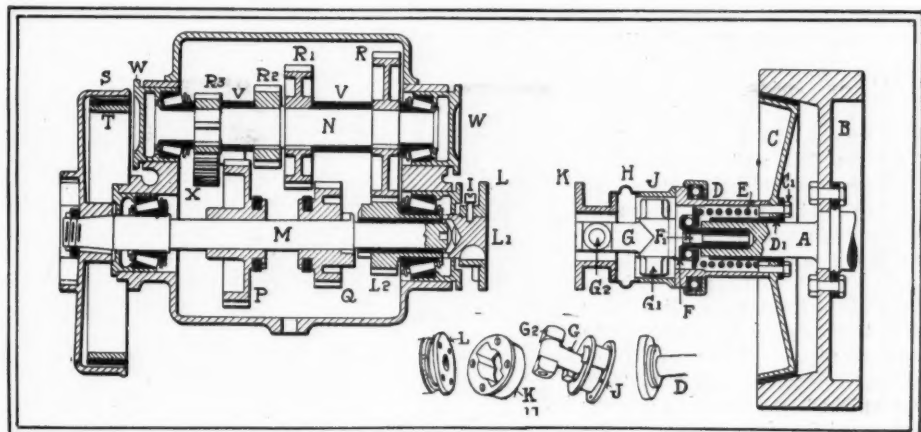


OPERATING LEVERS ON THE NEW STODDARD-DAYTON CAR

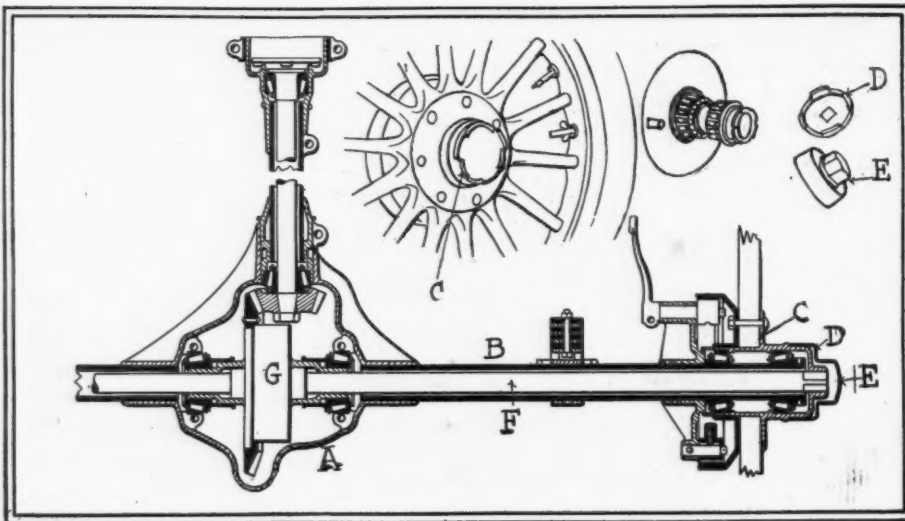
is a heavily-made aluminum housing with four arms resting directly on the subframe. The casing and the motor, as well as all the operating parts of the machine, are protected by a metal apron extending from the front to the rear of the gear box. This apron is made small and snug by using sheet metal plates between the main and subframe pieces and having only the apron extend between the subframe pieces.

On the rear end of the shaft leaving the gear box is keyed the regular brake drum S. This brake like the emergency on the rear hubs is of the expanding shoe variety, the shoe T being supported on a carrier on the gear case housing and provided with a covering of camel hair fabric. Double coil springs serve to keep the shoe off the drum when not engaged. This brake is applied by the right pedal, the connections with the shoe being through a chain, wheel and lever, with a cam for expanding the shoe. The brake is interconnected with the clutch, releasing the latter when the brake is applied. The clutch is in turn interconnected with the throttle, so that the application of either regular or emergency brakes throws out the clutch and throttles the motor. The emergency brake shoes are interchangeable with that used on the regular brake

and are expanded by a cam movement connected with the brake lever at the driver's right, the lever when the brakes are not applied standing vertically at the right of the seat and not interfering with entrance to the front seat. The interlocking system between either brakes and the clutch is simple. The clutch pedal H is carried on a short shaft and connects with the clutch through the rod and lever H1, the lever being on a cross shaft with arms for carrying the yoke for the clutch. The emergency brake lever shaft carries on its inner end the two-arm lever K, the top arm of which is connected with the brakes and the under one through a rod E with the clutch shifting rod, so that in applying the brakes the lever when carried to the front moves the under arm of the lever K to the rear, withdrawing the clutch, and the clutch when withdrawn acts through the arm J and rod I with the throttle, closing it. From the rod I the other throttle connection with the small lever on the steering column can be noticed. The foot brake being on the same shaft as the clutch pedal is interconnected by a short lug on the brake sleeves so that when the pedal is pushed ahead this lug locks with the sleeve on the clutch pedal, thereby carrying it forward also, but per-



STODDARD-DAYTON GEAR CASE, FLEXIBLE COUPLING AND CLUTCH



CONSTRUCTION OF STODDARD-DAYTON FLOATING REAR AXLE

mitting of the clutch pedal being carried forward for disengaging the clutch without applying the brake.

The propeller shaft to the rear axle is housed within a casing acting as a torsion rod between the gear box and the axle and for removing the strain off the shaft when running. The front end of the housing forms a covering for the universal joint in the shaft, the housing proper being mounted in a ring, the outer part being spherical and located within a similar socket attached to a cross piece of the main frame and the joint being of the sliding variety cares for irregularities owing to spring depressions. In the rear axle the differential housing A is split horizontally above the drive shafts, the top part being readily removable for inspection purposes. The drive shafts F simply rotate the road wheels, not being called upon to carry any of the car's weight, it being protected by having the axle casing B extend through the hub of the wheel and the Timken roller bearings being carried between this housing and the wheel hub C. In locking the drive shaft F with the wheel hub, the shafts which are squared where they enter the spur gear differential G are also squared to receive the lock nuts D, these nuts having jaw teeth for interlocking with others on the outsides of the wheel hubs D. Over these are placed the hub caps E. By this construction the entire drive shafts can be withdrawn from the housing by simply taking off the hub caps, removing the clutch caps D and then the differential can be lifted out through the opening in the top of the housing. The construction of the rear brakes is shown, the brake drum being bolted to the wheel hub and the shoe carrier supported direct to the axle housing. The differential housing is strengthened by webs across the front angle spaces and by having the housing sleeves long.

Stoddard-Dayton bodies for 1906 bear strong resemblance to the present style, being, of course, larger. Accommodation for five is furnished, the tonneau seating three and its floor is made sloping, rising toward the front and

beneath it is a tire carrying compartment in which an outer casing and several air chambers can be stored. The gasoline tank is placed beneath the front seat and a tool box is made within the step to the rear seat. The dash is made in one piece instead of three, as formerly, and on it is mounted the four vibrator coil. Considerable difference is found owing to the change speed lever rising from the footboard within the body. Hood design remains the same, the upholstery is in full leather heavily tufted and the standard color, Stoddard-Dayton pearl gray, remains.

A new muffler has been added in the cooling system, the present one of horizontal tubes giving place to one with twenty vertical flat tubes connecting between upper and lower water tanks. The tubes are separated by a double set of zig-zag flanges giving the appearance of a honeycomb construction.

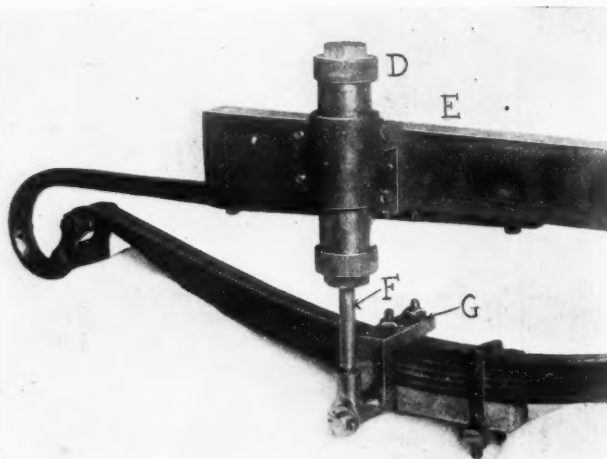
#### TAKES UP THE SHOCK

Anti-shock absorbers for automobiles, that a few years ago were a novelty on any motor car are today counted upon as the ordinary equipment of many machines. The early styles of these devices were all constructed on the friction principle consisting generally of a pair of friction disks held firmly face to face by bolts or screws and one of the disks attached to the axle

of bottom half of the spring and the other secured to the vehicle frame. Of late the air cushion device has been receiving most attention and of late a new one has been brought out. This device is made by the Sheddan Mfg. Co., of Baltimore, Md., and consists of an air chamber D enclosed at both ends and secured to the side piece A of the car frame by a bracket E. Within this chamber is a double-acting piston made rigid with the piston rod F. This rod is in turn pivoted at its lower end to a stud projecting from the bracket G attached to the vehicle spring. The action of the piston and the air cushions is simple. When the car drops into a rut or gutter in place of its going down with a sudden jar it is eased down by the air cushion D being forced down on the air cushion above the piston and when the car rises out of the rut or strikes an obstruction the frame portion is prevented from rising by the air cushion beneath the piston. Both ends of the chamber D are airtight so that the piston attached to the rod F is constantly working up and down between a pair of air cushions, one of which is compressed whenever the other is expanded, and vice versa.

#### NEW TREBERT MOTOR

The Trebert Gas Engine Co., of Rochester, N. Y., has added to its regular list of gasoline engines for automobiles an air-cooled type, in which cooling is accomplished by the use of fins inserted in the sides of the cylinders, and then enclosing the entire cylinder in an aluminum housing and forcing an air draught through this housing and consequently around the cylinder walls by means of a rotary fan carried in front of the motor. The air blast from the fan to each of the cylinders is conducted through a large aluminum blow pipe carried along the left side of the cylinders, with a branch going to each cylinder. The branch to each cylinder enters the aluminum housing for the cylinder so that the air current is directed around the entire casting. The heated gases exit from the bottom of the cylinder housings and pass out through the bottom of the car bonnet or back through the flywheel, which is made with small spokes, giving free exit to these gases. The blower construction is shown in the illustration and the front end of it is enlarged to carry the fan which is driven by a flat belt from the end of the crankshaft. This location gives the fan a speed equal to that of the crankshaft and insures a strong air blast directed to each of the cylinders. The top part of each cylinder wall is fluted vertically, these being for containing aluminum fins used in conducting the heat from the cylinder walls. Each fin or rather each pair of fins is made by taking an oblong sheet of aluminum and folding it lengthwise in the center, leaving a hollow round portion in the fold. This rounded part is inserted in the flute. After folding the sheet is pushed into a toothed form, the parallel wings extending from the fold the same as the teeth in a comb extend from the back. After this the wings are twisted



SHOCK ABSORBER OF SHEDDAN MFG. CO.

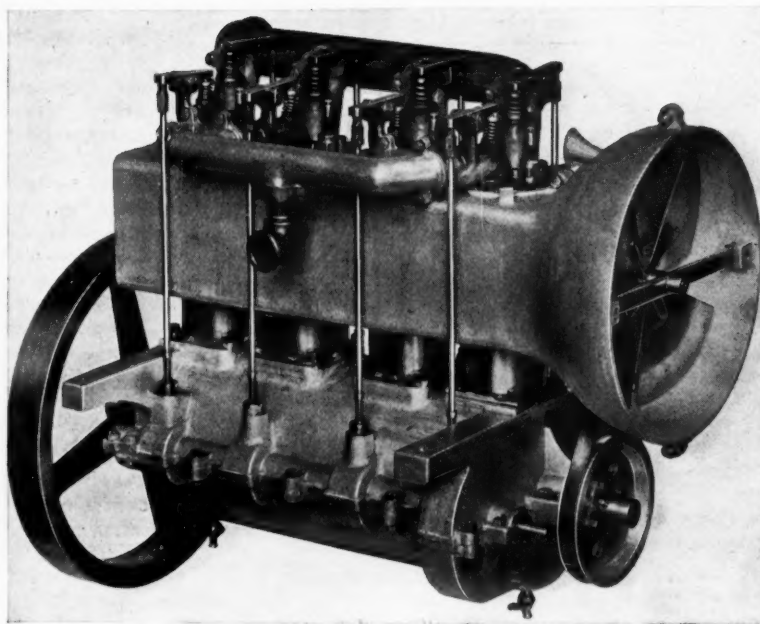
as to extend transversely from the central portion and at right angles to it.

Aside from the cooling scheme few interesting points are met with in the motor. Both sets of valves, mechanically operated, are located side by side in the cylinder heads, recourse being had to a pair of camshafts one in either side of the crankcase and valve actuation from these through pushrods and overhead rocker arms, one end of the rocker arm being pivoted to the top of the push rod and the other resting on the valve stem head. The bore and stroke are  $3\frac{1}{2}$  and 4 inches respectively and the rating is 16 horsepower. A crankshaft speed range between 150 and 1,800 revolutions per minute is claimed. Simple intake piping from the carbureter as well as a exhaust piping to the muffler is used, and the latter is noticeable in that it is of large diameter and well removed from the cylinders, thereby keeping the heat away from them. Splash lubrication is used.

#### USING BALANCED THROTTLE

Wheeler & Schebler, Indianapolis, Ind., makers of the Schöbler carbureter, are retaining their carbureter for the coming season in much the same form as it has been used this season with the exception of a few improvements, among which is the use of a balanced throttle for those motors using a governor for caring for the throttle valve. This throttle consists of a drum A sliding horizontally within the casing part X. One end of the drum, that next to the carbureter nozzle, is open and the other one closed so that with the drum occupying a position close to the carbureter casing proper the passage to the motor by the opening C is closed. In the opposite end of the drum A are slotted openings, one of which can be noted at J, and through these the mixture escapes to the motor. The balancing feature of the throttle consists in having the casing X near the slotted end of the drum made slightly larger than the drum diameter as shown at L so that when the drum is drawn by the rod B to the position shown in the illustration the mixture commences escaping to the motor. Ordinarily, as the pipe C connects from the upper side of the casing X, the tendency would be for the escaping mixture to pull the drum toward the top part of the casing, causing it to bind and slide stiffly, thereby not being as sensitive as it should to the speed of the motor. To avoid this binding the increased diameter at L which surrounds that end of the drum has been used and now the mixture instead of passing out of the slots at the top side of the drum passes out through them, all around the drum head and exists by way of the surrounding opening L to the entrance of the passage C.

In the other details of the carbureter few changes are encountered. The air supply is still located at D, with a spring controlled valve F, always partially but never entirely obstructing the passage. On



NEW TREBERT AIR-COOLED FOUR-CYLINDER MOTOR

slow speeds the valve remains almost closed, but with each increase in motor suction it opens, thereby permitting more air to pass the angularly placed spraying nozzle G located in the elbow of the mixing passage and exactly in the center of the ring-shaped float K. External adjustment of the nozzle is by the finger lever M and at the base of the float chamber is a stop cock N for draining off the gasoline supply. The control of fuel from the gasoline tank in the car remains the same, the pencil-shaped valve H serving to open and close the passage. This valve rests on an arm S, the inner end of which is attached by screw to the bottom of the float, so that the valve varies with the level of gasoline in the chamber.

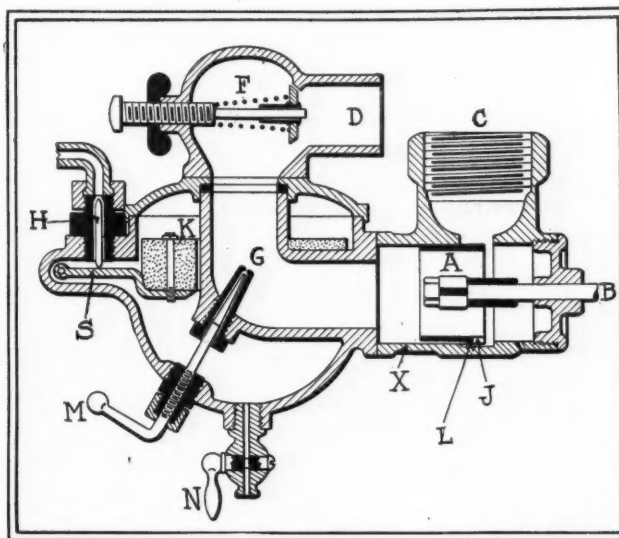
#### VERTICAL MOTOR IN ELMORE

One of the attractions at the coming shows will be the new five-passenger Elmore touring car in which is placed a vertical four-cylinder, two-cycle water-cooled motor. Its maker, the Elmore Mfg. Co., of Clyde, O., has previously made machines with the horizontal type of motor with never more than two cylinders and the bringing out of a large touring car shows that the company's faith in the two-cycle proposition is increasing and that the vertical two-cycle motor is ready to take its place in the field of automobile construction. The motor with its bore and stroke of  $4\frac{1}{2}$  and 4 inches respectively has a rating of 35 horsepower and couples through a Mercedes type of ring clutch with a sliding gear set giving three forward speeds and one reverse. Final drive is by propeller shaft. An Elmore carbureter, fashioned along Krebs lines, is used, lubrication is by

a Hill oiler, roller contact is used in the commutator and standard control features are found. In the running gear tubular axle construction with Hyatt roller bearings is used, the wheel base measures 104 inches, tire measurements are 34 by 4 inches in front and rear and pressed steel exists in all parts of the frame construction. The body is a graceful production having Napier lines visible in many places except in the Mors type of hood. Side entrances are wide, a straight dash carries several of the small parts and a running sideboard connects the front and rear fenders. The other Elmore model is a 24-horsepower, horizontal cylindered machine. In it the power transmission is through a planetary gear set and shaft to the rear axle. Many changes are noted in its construction over the present model.

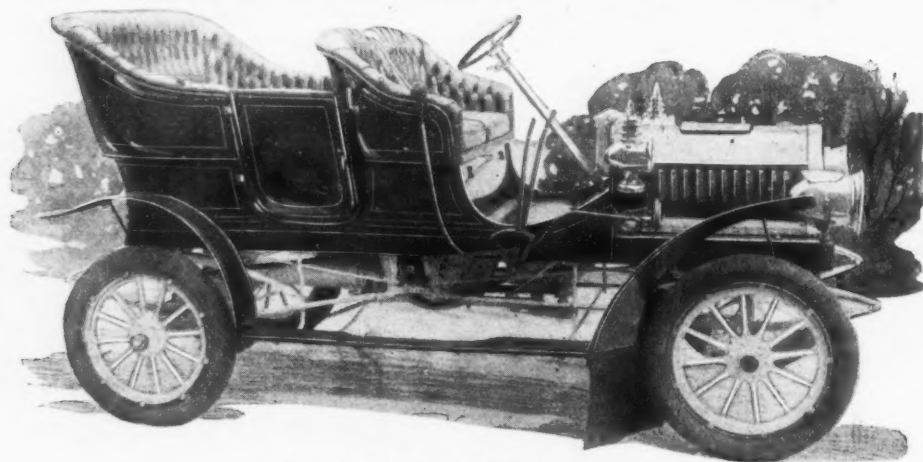
#### CRAWFORD'S LEADER

A five-passenger touring car with a 24-28-horsepower four-cylinder motor will be the leading model of the Crawford Automobile Co., Hagerstown, Md., for the coming season. This machine is vastly different from the present five-passenger machine of the firm in that the cylinders have a measurement of  $4\frac{1}{2}$  inches bore and stroke. A new gear set operating on the selective principle and giving three forward speeds replaces the present individual clutch type, but final drive through a pair of side chains connecting the sprockets on the end of the jackshaft with those on the rear hubs remains. Six inches have been added to the wheel base, its present measurement being 100 inches. The road wheels have been increased to 34 inches and  $3\frac{1}{2}$ -inch tires fitted. Ball bearings are features of the transmission set and jackshaft as well as with the road wheels. Good baggage-carrying space is provided in the body, there being several compartments for such.



SECTION OF SCHEBLER CARBURETER WITH BALANCED THROTTLE

## LOGAN LINE FOR NEXT YEAR



THE 1906 LOGAN FIVE-PASSENGER CAR

**B**OTH air and water-cooled motors will be used on Logan machines to be built by the Logan Construction Co., of Chillicothe, O., during the coming season. Two large pleasure cars with accommodations for four and five passengers, are fitted with the Logan two-cylinder opposed motor carried beneath the body. The other pleasure vehicle, a two-passenger runabout has an opposed air-cooled motor carried crosswise beneath the bonnet. It is connected by a combination of shaft and single chain drive, whereas single-chain drive from the engine shaft is used on the two water-cooled machines. The water-cooled cars are known as models G and H, the former having cylinders with a bore and stroke of  $4\frac{3}{4}$  and 5 inches, with a rating of 20 horsepower, and the latter with a rating of 30 horsepower, its cylinders having  $5\frac{1}{2}$  by 6-inch measurements. The air-cooled model, rated at 10 horsepower, is known as style F. In all three models a sliding gear set giving two speeds ahead with direct drive is used. Final drive through a single chain remains a feature on all types. Model G has a 90-inch wheel base, 30 by  $3\frac{1}{2}$ -inch tires and weighs 1,655 pounds. In model H the wheel base measures 100 inches, the wheels are 32 inches with 4-inch tires and the weight approaches 2,150 pounds.

Logan frames are made of angle steel, the angles having a wall thickness of  $\frac{1}{4}$  inch and the angle arms being  $2\frac{1}{2}$  and  $1\frac{1}{2}$  inches wide. All parts are riveted. Reinforcing pieces are used at the corners of the main pieces. Attached to the center of the frame on either side are peculiar shaped brackets, to which both the front and rear radius rods are attached by hinged bolts. The front and rear ends of these radius rods are fastened to the spring seating on the front and rear axles. The rear rods have turnbuckles with double threads for chain adjustment. Axles are made from steel tubing. The spring suspension is a full set of four elliptics, the rear pair being slightly the longer.

Horizontal motors are used exclusively by this concern. In the water-cooled models they are placed lengthwise beneath the body at the left side, with the sliding gear set placed so that its main-

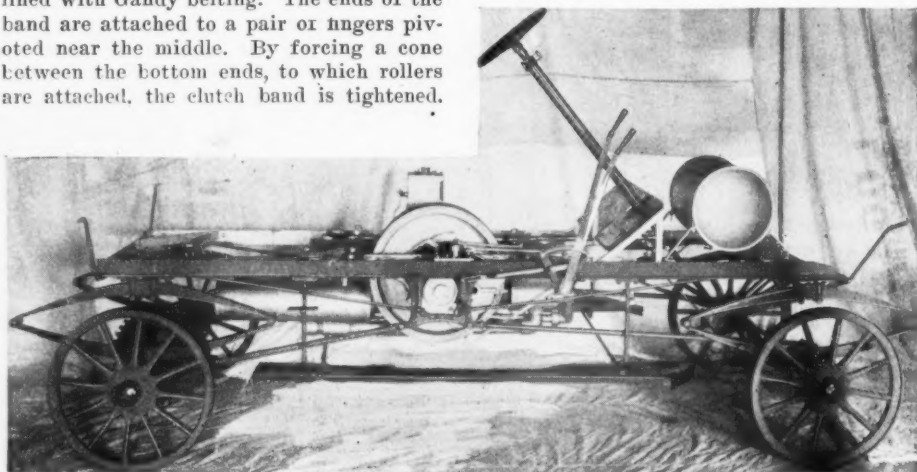
shaft is in line with the crankshaft. Drive to the rear axle is direct by single chain. The motor crankcase is in three parts, making it possible to remove the mainshaft or camshaft gears without dismantling any of the engine. Each cylinder is an integral casting, the cylinders within being both ground and lapped, giving a good finish. The crankshaft is an open hearth drop forging, and connecting rods are also drop forgings, with bronze bushings at the piston ends. Inlet valves are made  $1\frac{1}{8}$  inches in diameter, the same as the exhausts, and are automatically operated. Mechanical oilers are used, the drive for them being through ratchet and tappet from the camshaft. Other motor facts are jump spark ignition with current from duplicate sets of dry or storage cells, float feed carburetor and cooling aided by a gear driven pump. The radiator is of the tube variety with fins surrounding each tube. From it the circulation is to the pump and thence to the bottom of the water jackets.

Compactness characterizes the sliding gear set case, which takes its supports from a couple of cross pieces of the main frame, these pieces also carrying the front and rear cylinders. A contracting band clutch serves as a flexible connection between the crankshaft and gear set and between the two is a sprocket for the chain drive. The clutch construction is standard. On the motor flywheel is a cast flange, around which bears a steel band, lined with Gandy belting. The ends of the band are attached to a pair of fingers pivoted near the middle. By forcing a cone between the bottom ends, to which rollers are attached, the clutch band is tightened.

On the top forward speed drive is direct, no gears being in mesh, in which case the sprocket for the chain drive revolves at the same speed as the crankshaft. On slow speed and reverse a counter shaft is brought into use, a sliding gear serving to communicate power between the main and counter shafts. All speeds are gained by one side lever, the gears being so interlocked that changes in speed cannot be made without first disengaging the clutch, which, by the way, is operated by a side lever. A slight forward movement of this lever, after the clutch is disengaged, applies a brake on the transmission gear. The rear axle is of Weston-Mott construction and is fitted throughout with Hyatt roller bearings. The chain sprocket surrounds a spur gear differential and on either side of the latter is a Raymond double-acting band brake. Both are applied by pedal, the regular brake being located on the transmission.

Both cars have representative 1906 bodies, being featured by false hoods with radiators forming the front of them, wide side entrances, large fenders connected by running boards and heavy full leather upholstery. Straight dashes are used. On the inclined steering column below the wheel are throttle and spark levers, each working on separate quadrants. The body lines are easy, the rear seat being slightly higher than the front one and very wide. Model G has divided front seats and a detachable rear one.

Using an air-cooled two-cylinder motor in its 10 horsepower runabout can be looked upon as one of the leading 1906 features of this company, in that both air-cooling as well as runabout construction are new with it. The runabout, model F, is typical of all cars of the light class weighing 990 pounds, having a 90-inch wheel base, 28 by 3-inch tires and standard tread. The frame is a simple rectangle of angle steel with the motor, gear box and jackshaft carried on cross pieces. Spring suspension is by a set of four full elliptics, those in front being 30 inches long and those in rear 36 inches. Both seats are attached in standard form. Steel tubing of medium gauge forms the front axle, the Lemoine type of steering knuckles being carried in the usual form. Front wheels revolve on ball bearings, but Hyatt rollers are used throughout the back axle. Radius rods 10 inches long serve for



CHASSIS OF THE LOGAN TOURING CAR

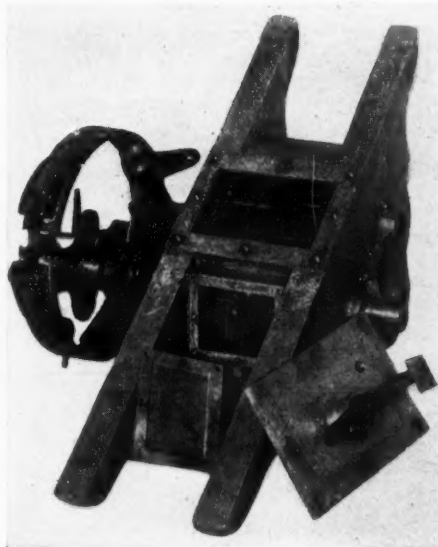
adjusting the drive chain and also in taking the strain off the road rear wheels.

Somewhat unique features combine in the motor and gear box arrangement, as well as in the final drive. The motor is of the opposed two-cylinder style, carried crosswise beneath the hood. Directly in the rear of it is the sliding gear, set with both shafts of the gear set longitudinally of the frame, being in this regard different from the water-cooled models. From the gear box a short shaft drives to a jackshaft by bevel gears. From the jackshaft a single chain connects with the live rear axle. The use of the jackshaft is imperative because of the final chain drive, as well as owing to the gear box having its shafts placed longitudinally.

Cylinder measurements—bore and stroke—of the motor are  $4\frac{1}{8}$  inches each. In cooling recourse is had to circular copper flanges, thirty-five of them being fitted over the outside of each cylinder which has its outer surface turned to receive them. Each flange has a depth of  $1\frac{1}{2}$  inches and they are placed as close together as possible, being not more than  $\frac{1}{4}$  inch apart. The cylinders are made with the heads integral and the latter are cooled by radiating metal flanges. A novelty is shown in the copper hopper-like device on the top of the crank case, which permits of the cover on the case being left off and a screen covering taking its place, the screen allowing a free air circulation within the chamber, but preventing the escape of the lubricating oil therefrom. In addition to these cooling features an 18-inch, six blade, rotary fan is carried on the front of the crank case and is driven at crank shaft speed, being placed direct on the front end of the shaft. Fiber is used in the fan blades.

Both inlet and exhaust valves are mechanically actuated and operate vertically in ports on the front side of the cylinder heads. Each valve is contained in a separate housing bolted to a flange on the cylinder head. In opening the valves a bell-crank arrangement is furnished, one arm of the crank resting on the end of the valve stem, the other being pivoted to the end of the push rod. These rods are typical throughout, being driven from a camshaft in the top of the crank case. Ground joints are used, doing away with gaskets and other packing around the valve cages. The crank shaft is a drop forging running in a pair of end bearings each 3 inches long and having a diameter of  $1\frac{1}{2}$  inches. Bronze bushings are used in these as well as in the crank throws and wrist pins. Machine steel is used in the camshaft. Four close-fitting compression rings are used on the pistons. The wrist pins are made from machine steel case hardened, and the connecting rods are steel drop forgings.

Two speeds and a reverse are given by the sliding gear transmission. The main shaft is connected with the motor through an external band clutch, the diameter of which is 9 inches and the face width  $1\frac{3}{4}$  inches. This clutch is the same as used on the water-cooled models. High speed is on the direct drive and on slow speed and reverse the usual counter shaft and idle pinion are used. From the rear of the case power is transmitted through a short shaft



LOGAN SLIDING GEAR SET

with a level pinion on its rear end meshing with another bevel on a sleeve on the jackshaft. This shaft remains stationary and is 1 inch in diameter, but the sleeve carrying the bevel revolves and is 9 inches long. It has a bronze bushing throughout its entire length. A ball bearing takes care of the end thrust. From this shaft to the back axle drive is by a single Diamond roller chain. Braking is by a pair of bands clamping on 6-inch drums on either side of the differential. The rear axle is of Weston-Mott construction and the steering gear of Brown-Lipe design.

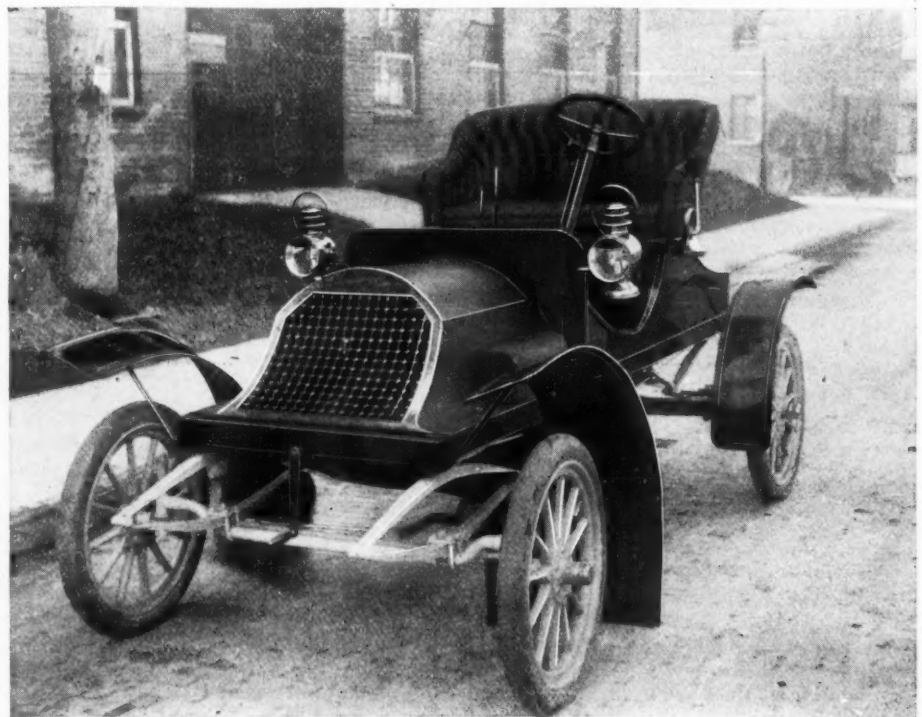
A new design of Logan muffler is used on all models. This is of the cylindrical type with several concentric chambers, the gases passing from one to the other, through circles of perforations.

Body lines are typically runabout. The bonnet, with a screen front, is shaped similarly to the Premier or Franklin runabout

hood of the present season. The steering column is well inclined, and from the seat the body lines descend gradually to the rear furnishing room for tools, tires and spare parts beneath it. On the dash is the usual quota of coil, oiler, switch, and other parts. Small fenders are fitted.

#### AUTOCAR MODELS FOR '06

Three Autocar models are announced by the Autocar Co., of Ardmore, Pa., for the 1906 season, one of which is the present runabout, flying several new feathers; the new model, a 24-horsepower five-passenger touring machine, and the third the present four-cylinder touring car, maintained in its present form. In the runabout the left side, horizontal lever steering and control features have been altered. Now a wheel steering outfit is installed on the right side with throttle and spark grip control at opposite sides of the steering wheel. A clutch pedal has been installed, and the gear shifting and emergency brakes levers placed outside of the body at the right side, making the machine operated exclusively from that side. Two horsepower have been added to the motor by increasing the bore to 4 inches, the stroke, 4 inches, remaining the same. Its rating of 12 horsepower is based on normal crankshaft speed. A mechanical oiler has been placed above the motor, taking the place of the present automatic type and 4 inches have been added to the wheel base, making that measurement 76 inches. The 24-horsepower machine is an embodiment of most of the present features and in general lines of construction follows the lines of this year's four-cylinder machine. The body, however, is hung higher and made considerably roomier with a few other features included. The cylinders have a bore and stroke of 4 and  $4\frac{1}{2}$  inches, the wheel base is 100 inches and Hyatt roller bearings are fitted in the gear box and rear axle. Plain bearings are used throughout in the motor.



THE 1906 LOGAN AIR-COOLED RUNABOUT



HOUSER YOUNGSTERS OF ST. LOUIS, WHO ARE EXPERT MOTORISTS

**Chicago After Chauffeurs**—The city of Chicago has advertised for two chauffeurs for the cars now owned by the municipality. It is demanded that they be experienced, law-abiding and without police records, the salary being \$1,000 a year.

**Ross to Go South**—Louis Ross, the holder of the Sir Thomas Dewar trophy, has made arrangements with the Stanley people for the building of a steamer according to his own plans and specifications. This machine is all but finished. The car will be ready for its trial in about a week, and then some interesting work will be done on a secret practice course.

**Youthful Drivers**—St. Louis motorists have watched with interest the development into expert drivers of the young sons of J. M. Houser, president of the St. Louis Globe Democrat. The elder boy, Douglas, aged 11, guides an Autocar run-about with great skill. Chicago, too, has a youthful driver in young Nelson Morris.

**Show Dates**—General Manager Miles, of the National Association of Automobile Manufacturers, announces that the following shows, in addition to the national show to be held at Chicago, February 3-10, have been sanctioned by the association: Washington Automobile Dealers' Association, Inc., February 3-10; Tri-State Sportsmen's Association, Detroit, February 12-17; Cleveland Dealers' Automobile Co., February 19-24; Buffalo Automobile Trade Association, March 5-10; Boston Automobile Dealers' Association, March 10-17; Denver Automobile Show Association, a date in April to be hereafter decided upon.

**Truce at Grand Rapids**—The fight between the police and the automobilists at Grand Rapids, Mich., is over. After the last outbreak of the authorities the bicycle police were pulled off and the motorists can now run as fast as they like without the fear that an officer with a stop watch waits on every corner. The superior court calendar, however, shows that the cases against four hotelkeepers, one of the hotels being partially owned by Mayor Sweet, for violation of the Sunday liquor law, will be up for trial this month. These cases are said to have been brought at the in-

stance of the automobile club in retaliation for the strenuous measures used by the authorities last summer.

**To Move In**—In Paris they are using the automobile to move with, it being no unusual scene to see a young couple, with the loose ends of their household which were too precious to risk in a moving van, driving through the streets in a car, which is loaded to the guards with bric-a-brac and other breakable articles.

**Giant Iceboat**—Commodore F. M. Underwood, of the Toledo Power Boat Club and head of the Toledo Machine & Motor Co., of Toledo, O., is working on his new iceboat, which he hopes will do a speed of 100 miles per hour. The boat will be driven by a gasoline engine, and will travel on land, water or ice.

**Courtesy Pays**—An Appleton, Wis., motorist has introduced an innovation in the jolly line. On the back of his car is a large sign reading "Thank you" which he displays by pulling a string when he has passed a farmer who has swung over and made room for him. In almost every case, he says, this courtesy has been acknowledged by the farmer.

**In Bowden's Place**—Despite all statements to the contrary, H. L. Bowden, who drove the mile in 34 $\frac{3}{4}$  seconds last year, will not be a competitor at the Ormond meet this year. He will be a passive spectator, but will not race. Boston will, however, send a new claimant for speed honors to Florida in the person of J. R. Harding, a prominent Brookline man who recently purchased a 90-horsepower Mercedes, and will be on hand to test his speed.

**Trophy Winners**—Winners of trophies in the contests of the Long Island Automobile Club were announced last week at the annual meeting. John H. Emanuel covered 6480 miles in a White steamer and won the Mersereau mileage mug. Charles Jerome Edwards traveled in six different states in a Cadillac touring car so he got the Mackey meandering memento. Dr. C. B. Edwards won the Long Island club's economy cup with his Franklin. E. C. Kinney landed the president's cup for bringing in twenty-four new

members. Officers elected were: President, Alfred Wilmarth; vice-president, Edwin Melvin; secretary, Walter G. Pierson; treasurer, Charles Jerome; governors for 2 years, Frank G. Webb, Dr. C. B. Barker and John H. Emanuel.

**Good Roads Deal**—At the good roads convention at Parkersburg, W. Va., December 4, all the national association officers were present. A permanent state association was formed and the work was placed under the supervision of vice-presidents for each county in the state. This is welcome news to Pittsburg motorists who have tugged long and hard to get over the country roads in that state.

**Good as Cow Pony**—Officer John Schifert, of Allentown, Pa., is an up-to-date cop. One day last week a herd of thirty-five cattle escaped through a broken fence at the abattoir of Arbogast & Bastian into the country north of that town. The minion of the law, not finding a horse handy, impressed a passing automobile into service and with the aid of a lariat succeeded in corralling the entire herd within an hour and a half.

**Herkomer Route**—As planned now the Herkomer 1906 tour will be over the following route: The course is 1,500 kilometers in length, beginning at Frankfort-on-the-Main, thus: Frankfort to Munich, 371.7 kilometers; Munich to Linz, 240.3; Linz to Vienna, 166.6; Vienna to Vienna-Neustadt, 80.3; Vienna-Neustadt to Semmering, 47; Semmering to Bruck, 57.2; Bruck to Loeben, 15.5; Loeben to Aussee, 125.8; Aussee to Salsburg, 100.6; Salsburg to Innsbruck, 160.1; Innsbruck to Munich, 133.9 kilometers.

**New Idea**—The pupils at the Hackley manual training school, at Muskegon, Mich., one of the largest manual training schools in the west, are now engaged in learning how to transform bicycles into motor cycles and also the construction of gas engines for boats and automobiles. They are using machinery purchased by the board of education but are engaged in the constructing of machinery which they will install next spring. The board has purchased six sets of castings for 2 $\frac{1}{2}$ -horsepower gas engines for either stationary or marine engines. At the end of the year, if the pupils wish to own the engines, they may do so by paying for the castings.

**Bay State Aggrieved**—The motorists of Massachusetts feel somewhat slighted over the fact that in making out the route for the Glidden tour of next year the touring committee has seen fit to overlook that state in making out the schedule for the return. At the present time it is proposed to send the tourists from Bretton Wood to New York through Vermont, thus giving Massachusetts the go by. This, however, it is understood, has not been definitely settled upon and it is possible that the committee may decide later to send the tour over the beaten path of Massachusetts and Connecticut. It is done unquestionably on account of the experiences at Leicester on the last tour, but it is admitted by some of the tourists that there was a little fast work on that occasion even if the penalty did fall on innocent shoulders. However, that is not the question. There is reason to believe Massachusetts will next year, as it did in the last

tour, furnish a great number of entries and under those conditions it is entitled to some little consideration, it is felt. It is proposed by several of the organizations to pass a vote requesting the committee to more fully consider the claims of Massachusetts.

**Delegates Appointed**—At the meeting of the members of the Lucas County Good Roads Association at Toledo, O., last week, the following delegates were chosen to attend the first annual convention of the state organization to be held at Columbus January 11: J. W. Kerr, F. J. Norris, C. S. Ashley, Frank Spangler, J. H. Crawford, all of Toledo; C. W. Shoemaker, of Waterville; H. A. Taylor, of Swanton, and Thomas Crofts, of Oregon township. Another meeting will be held on January 5, at which time each delegate will appoint ten additional delegates. The state meeting will ask the legislature to provide a fund for the inauguration of the new movement in the state.

**Owners Organize**—The latest automobile organization in Boston is known as the Automobile Owners' Association, which has been formed to protect owners of cars from unjust arrest, and also to prevent reckless and dangerous driving. It is intended to try all complaints for alleged overspeeding, as well as to appeal such cases worthy of it. The association will provide attorneys for so doing without cost to each member in excess of the annual dues. By this means it is hoped that towns can be dissuaded from making indiscriminate arrests and deprived of the revenue which convictions in such cases produce.

**Slow in Michigan**—The Michigan statute regulating automobiles will soon become a dead letter unless chiefs of police and sheriffs, in whose hands the enforcing of the law lies, are more strenuous in their efforts to see that all owners are properly registered. To date there have been only 2,935, while the lowest estimates place the number of machines in the state at 5,000. The applications for licenses are coming in slowly and the number of new licenses is not greater than the number of new owners of automobiles. The law directs police and sheriffs to see that no machine runs without a license and it is likely that some steps will be taken toward determining those in the state who have not complied with the law.

**Tip for Gliddenites**—J. H. Morrow, manager of the International Carriage Co., at Brighton, Ont., which is about half way between Cobourg and Belleville and 90 miles from Toronto and 72 miles from Kingston, on the line of the Glidden tour for 1906, writes MOTOR AGE that he is willing to furnish information regarding the condition of the roads. He says that in July, 1904, he followed the route mapped out for the tour in Canada only he did not go to Picton through Prince Edward county, keeping close to the water all the way to Kingston and Prescott instead, having to cross on a ferry at a point some 3 miles below Picton. He declares the roads are better direct by Belleville and Napanee than the way he went to Kingston. From Kingston to Brockville there are three routes. The line from Prescott to Ottawa is declared to be a poor one, Mr. Morrow suggesting that instead of

going that way the tourists travel through Morrisburg, 12 miles further on, where there is a fine stretch of macadam, while through Prescott there is a stretch of 24 miles of horrible roads.

**Names, Please**—W. L. Smith, 524 Penn avenue, secretary of the Automobile Club of Pittsburg, desires secretaries of all automobile clubs in Pennsylvania to communicate with him with the idea of forming a state association.

**Wins Two Medals**—F. C. Gates won both the trophies presented by the Cleveland Automobile Club, one for the member covering the greatest number of miles from December to December, and the other to the member completing the longest tour. Gates traveled 7,531 miles in the 12 months, 300 miles more than Charles H. Coit. W. C. Curtiss was third. Gates' longest tour was 904 miles, running from Cleveland to Indianapolis, to Chicago and then back by way of Toledo. Gates drove a Winton.

**It's Different Now**—It's a good thing for property owners that Pittsburg has an automobile row. Three years ago one could have bought property on Center avenue, Baum and Beatty streets, East End, for little more than half what it now costs. Since the \$20,000 home of the Automobile Club of Pittsburg was completed and became the recognized center, values in that vicinity have been going up rapidly. Instead of the big liveries that used to supply the swell turnouts in the East End there are now seven large, fully equipped automobile establishments, besides two stores where automobile parts are sold—all within an easy stone's throw of the club house. The liveries were losing their business so fast that two of the big barns have been turned over this year to new automobile companies which have remodeled them for garages at a large expense. The Banker Brothers, Standard, Hiland, Central, Liberty and East Liberty companies are all within hailing distance of each other and another new firm will join the bunch early in the spring. Only one of these concerns owns its property,

the Hiland, which recently bought a large site in Center avenue and is building a \$25,000 garage. The other buildings are leased or were erected on ground rents.

**Buffalo Show**—Application blanks for space at the fourth annual Buffalo automobile show, which will be held at Convention hall the week of March 5 to 10, are ready for distribution, and can be had by applying to the manager, Dai H. Lewis, at the rooms of the Automobile Club of Buffalo, 760 Main street. The allotment of space will be made Tuesday, January 2.

**Now They'll Be Good**—Philadelphia's director of the department of public safety has organized a new bureau for the special protection of the public in the central section of the city. It will be made up of mounted patrolmen under the head of a police captain. The mounts will be horses, bicycles and motor cycles—no less than fifteen of the last named to be in constant use during the busiest part of the day. They are for the special purpose of enabling the cops to overhaul automobiles and other vehicles which travel faster than the legal limit. Stop-watches are to form part of the equipment of each officer, and as the sleuths have been doing mathematical stunts for the past week in order to enable them to quickly calculate speeds, many arrests along this line are expected, as orders have been issued for a strict interpretation of the mile-in-6-minutes ordinance. Indeed, quite a number have already been made of automobilists who have exceeded the limit on Broad, Chestnut, Walnut and other much-traveled streets. Each officer of the new bureau is provided with a whistle which emits a peculiar and far-reaching shriek, and if the culprit manages to get away from one the next will be waiting for him. Recent arrests have developed the fact that counterfeiting and changing of tags is being carried on quite generally, and all offenders in this respect will receive an additional dose of the law's medicine. The Quaker automobilist will hereafter be compelled to live up to his reputation as a conservator of the peace or take the consequences of his law-breaking actions.



FRENCH COUPLE USES AUTOMOBILE FOR MOVING VALUABLES

# Current Automobile Patents



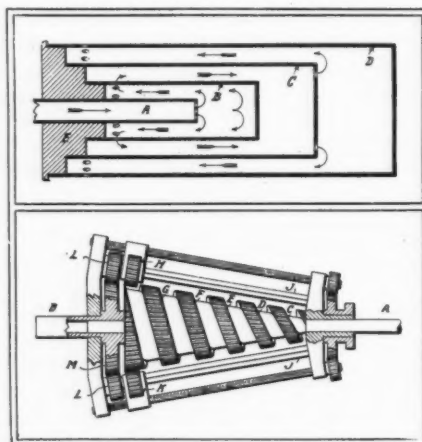
**Sliding Gear Set**—No. 806,316, dated December 5; to Charles E. Bertels, Wilkesbarre, Pa.—In this gear set of the sliding type the feature consists in having four shafts—A from the flywheel, B immediately in rear of this and connected by the clutch F and having on the other end the gear E; C a squared shaft with sliding gears H and K, and in rear the short shaft D connected to shaft C by the clutch L and having a beveled pinion for transmitting the power to the differential, which is carried in the rear part of the case. A countershaft M carries three gears Q, P and N, the last being continually in mesh with gear E on the shaft B. On direct drive the two clutches L and F are engaged simultaneously through the operating mechanism R, and the internal gear K is shifted so as to mesh with the rear half of the gear E. In this way the four shafts A, B, C and D are linked together and drive is direct to the differential. For second speed the clutches L and F remain engaged and the internal gear K which has also an outer gear face is meshed with gear P on the countershaft, the drive being through shafts A and B and gears E and N to the countershaft and from this shaft through gears P and K to the shaft C and thence through the shaft D to the differential. For slow speed gears H and Q are used and in reversing the regular idler is introduced. Both clutches L and F work together, being engaged and disengaged at the same time and the apparent object of their use is the doing away of the clutch and the flywheel of the engine.

**Multi-Tube Muffler**—No. 806,714, dated December 5; to John M. Porter, Parkersburg, W. Va.—Exhaust gases enter the muffler, through a piping A extending half way through the muffler, which has perforations in its inner end for the gases to enter through. The muffler proper consists of three concentric tubes, B, C and D, each secured to the common part of the casing E. Tubings B and D have both ends closed and the escape of gases from them is through small perforations near the part E of the muffler, but in the tubing C the perforations for the escaping gases are in the form of a circle in the end of the tubing. The flow of gases through the muffler is shown by the arrows, the perforations, being respectively placed in the opposite ends of the successive tubes, cause the gases to travel from end to end of each tubing and having each tube of greater diameter and length than the one within it, the gases are given sufficient expanding room.

**Friction Drive**—No. 806,302, dated Decem-

ber 5; to Zadock B. Starr, Gloversville, N. Y.—This scheme of friction drive has a few points of difference over those already used in this type of automobiles. On each end of the crankshaft of the motor D is a large friction disk A against which bears a small friction wheel E on the forward end of a longitudinal shaft which carries a similar friction wheel F on its rear end. The later wheel F works between large friction disks C and C1, both being on a shaft which carries a sprocket on its outer end for drive to the rear wheels. In driving ahead, the friction wheels F are in contact with disks B1 and C so that both rear wheels are driven in the same direction and in reversing these gears are made to contact with the disks B and C1.

PORTER'S MULTI-TUBE MUFFLER



ROSEWARNS' SPIRAL GEAR

To get different speeds ahead, arrangements are made so that the shaft carrying the gears E and F can be slid to the front or rear. When in the former position, gear E bears on the disk A near its center and is consequently driven more slowly than when it bears on the disk near its periphery, and at the same time the wheel F bears on the disk C near its periphery, driving it still more slowly. On high speed E is practically at the periphery of A and F is as near as possible to the center of C, and on slow speed their positions are reversed.

**Rear Wheel Drive**—No. 806,452, dated December 5; to Charles S. Bauld, Latrobe, Tasmania, Australia.—In constructing a rear wheel for an automobile the inventor uses a hollow hub A with an internal race of teeth

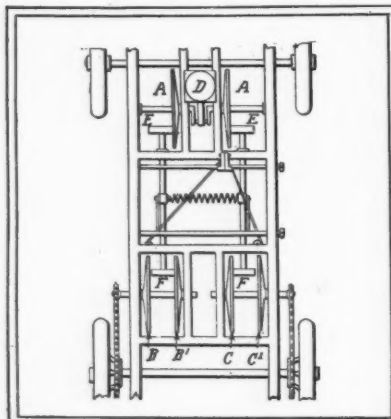
in which mesh the pinion C, carried on the bottom of the T-shaped arm B, the horizontal arms of this piece having plain rollers for contacting with a plain ring on the inside of the hub. The power is transmitted through the pinion C, thereby causing the wheel to rotate.

**Spiral Change Speed Gear**—No. 806,190, dated December 5; to Richard E. Rosewars, Covington, Ky.—In this gear box, which is suitably illustrated, the shaft A connects with the motor and clutch and carries on it a spiral gear, arranged on a cone-like shaft, the spiral gear having toothed surfaces, C, D, E, F and G. The shaft B connects with the rear axle and has rigid with it the large gear M, constantly in mesh with a pair of pinions L. These pinions are on long shafts J, upon which are the sliding pinions H and K. By meshing these with the respective gears C, D, E, F or G, as many variations in speed can be obtained, the gears H and K of course being arranged to move together at all times.

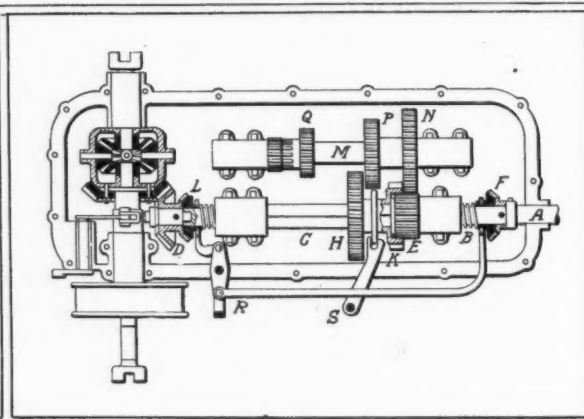
**Two-Tube Muffler**—No. 806,715, dated December 5; to Nathan W. H. Sharpe, London, England—This muffler has two concentric tubes; one which forms the casing and an inner one of slightly less diameter and of the same length as the casing. Gases from the motor enter the inner tube at the forward end and passing through it leave it through perforations at the rear end and then pass to the forward end of the outer casing, where they are liberated through a series of perforations. The gases in passing between the inner and outer casing have their progress interrupted by eight baffle plates each filled with small perforations.

**Tubular Muffler**—No. 805,613, dated November 28; to Frederick S. Williams, Amsterdam, N. Y.—In designing his muffler for silencing the exhaust of a gasoline engine, the inventor makes use of a long cylindrical casing of medium diameter, within which is a nest of tubes similarly arranged to the tubing in a return pipe radiator. Hot gases first enter a central tube of a large bore and from the farther end they are conducted into a series of smaller tubes extending from one end of the muffler casing. From these they finally exit into a large chamber from which they pass to the outer air.

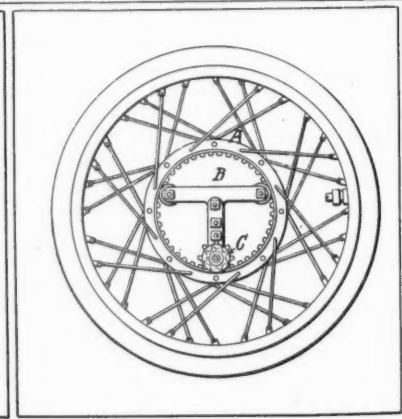
**Rear Axle Drive**—No. 805,567, dated November 28; to Thomas J. Lindsay, Indianapolis, Ind.—The inventor has so designed his differential housing that the entire differential gear can be removed through a cap in the top of the housing without withdrawing the drive shafts from the axle, connecting the differential bevels with the road wheels. He accomplishes this by constructing the housing so that the top half can be removed in line with the bearings and each drive shaft from the road wheel instead of entering the bevel of the differentials and being keyed thereto, is connected by a jaw type clutch with a short shaft made integral with the bevels, the short shaft being axially in line with the drive shafts to the wheels. The clutches permit of lifting out the whole differential gearing when the top half of the housing is removed. The jaw clutches, having their jaws at the same angle at each side of the differential, allow of this.



STARR'S FRICTION DRIVE

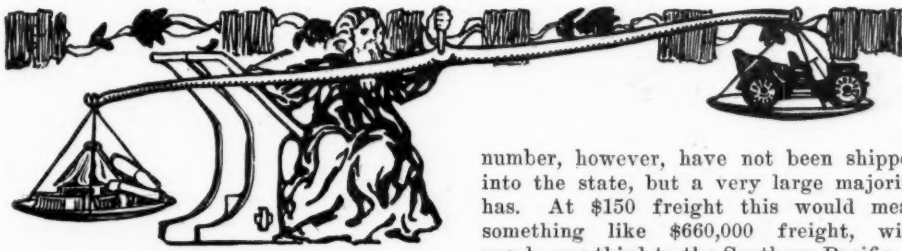


BERTELS' SLIDING GEAR



BAULD'S REAR-WHEEL DRIVE

## LEGAL LIGHTS AND SIDE LIGHTS



## FIGHT FOR FERRY PRIVILEGE

San Francisco automobilists are exceedingly wrought up over what they term too stringent regulations regarding the automobile ferry traffic on the broad gauge boats plying between this city and Oakland. The automobile dealers have not taken kindly to the new ruling made by the Southern Pacific Co. for the transportation of the modern chariots and as a result they will seek to divert the freight trade that falls to the S. P. by way of retaliation. Some time ago they conveyed automobiles at all hours, but on October 15 new rules went into force that raised a howl from the dealers. The Northern California Automobile Dealers' Association is a new factor in the local motor firmament and evidences of its strength are already becoming apparent. The matter which this new organization is at present much taken up with is that of obtaining more just treatment at the hands of the Southern Pacific. To this end the association adopted a resolution a few days ago and the automobilists are anxiously awaiting the outcome of the fight against the railroad. The resolution is as follows:

Whereas, The Southern Pacific Railroad Co. has arbitrarily cancelled privileges heretofore granted owners and users of automobiles on its ferry boat system crossing the bay of San Francisco between the cities of San Francisco and Oakland; and

Whereas, Said owners of automobiles and dealers in same are shippers of a large amount of freight over the lines of said railroad, and such action on part of said railroad has materially interfered with the business of said owners and dealers in automobiles; be it hereby

Resolved, That the dealers in automobiles hereby agree to hereafter route all their shipments over other lines than those controlled by the Southern Pacific railroad, and under no circumstances will they permit any of their freight to be carried by said Southern Pacific railroad during the season of 1906, or longer, unless the unjust restrictions be immediately removed, and all the privileges heretofore enjoyed by said owners and dealers in automobiles be immediately restored to them.

In discussing the affair with the MOTOR AGE correspondent one of the dealers said:

"We want the Southern Pacific to make more liberal rules. As San Francisco is situated, the restricting of the ferry service means that the people will not buy automobiles if they have to continually leave the city by way of the peninsula. This makes a 100-mile trip if one wishes to go to Oakland and fails to make the ferry at times designated by the railroad people. If the Southern Pacific insists on the present rules we are going to ship our cars by other routes if we have to send them up north and bring them to the city on the steamers. Not only that, but we expect that every dealer in automobile supplies will join us in this movement. Up to the present time 4,393 automobiles have been registered at Sacramento. All of this

number, however, have not been shipped into the state, but a very large majority has. At \$150 freight this would mean something like \$660,000 freight, with nearly one-third to the Southern Pacific. It can easily be claimed that the railroad has received over \$200,000 in freight charges from the automobile trade, and it is this which we are going to try and turn into other channels if we cannot get more liberal terms in the way of transportation on the ferries. By working through the Northern California Automobile Association I think we can work to better advantage and compel the railroad to treat us fairly. With all the money the automobile trade turns over to the railroads we ought to be treated with consideration. It is a senseless thing to expect us to make such a roundabout trip to get to Oakland if we are unlucky enough to strike the wrong hours at the ferry."

## QUAKERS FIGHT NEW LAW

Attorney Ira J. Williams, counsel of the Automobile Club of Philadelphia, has filed a bill in equity in common pleas court, enjoining and restraining the city from taking any action under the local automobile law on and after January 1 next. The automobile club is supported in this action by the Philadelphia Automobile Trade Association, which named a committee to co-operate with the club. The trouble seems to hinge on the question whether, in a large city, the state or municipal law is paramount. The legal officers of each insist its own law must be observed, and the automobilists are up in the air. There is quite a little wad of money involved also, the Philadelphia bureau of boiler inspection, which has been issuing local licenses, having taken in about \$5,000 during the present year, charging \$2 for new licenses and \$1 for renewals. Under the state law charging \$3 per, this amount will be materially increased in 1906, even without taking into consideration the naturally-to-be-expected large increase in the number of applicants. The legal action taken by the automobilists is a friendly one, the local authorities being as desirous of securing a legal solution of the puzzle as are the plaintiffs themselves—H. Bartol Brazier, Charles S. Wurts, Jr., and Samuel Y. Heebner, of the automobile club. The action is directed against the city of Philadelphia, John Weaver, mayor; Sheldon Potter, director of public safety; John M. Walton, city controller; John M. Lukens, chief of the bureau of boiler inspection, and Henry R. Shoch, city treasurer, and asks that they be enjoined from enforcing the ordinance of December, 1902, averring that it conflicts with, and is superseded by the act of assembly of April 19, 1905. The appellants ask for a temporary injunction, to be made permanent after a court hearing.

The state highway department has just issued a pamphlet containing the new auto-

mobile regulations. It emphasizes the fact that the operator is licensed—not the machine; that licenses cannot be transferred; that none but the regularly issued Pennsylvania tags can be legally carried on an automobile while within the boundaries of the states—the main clause around which the fight centers; that front and rear lights—the latter red, with a white side illuminating the rear tag—must be carried at night; that an operator must stop when signaled by an approaching driver; that speed in cities and boroughs must not exceed a mile in 6 minutes and outside these limits, a mile in 3 minutes, and that no borough or city has authority to fix a speed limit less than that established by the new law; that upon certification a license may be revoked for a period of 6 months upon the holder's second conviction of violating any of the provisions of the new act; and that the act applies to all forms of motor vehicles, motor cycles also coming under this heading.

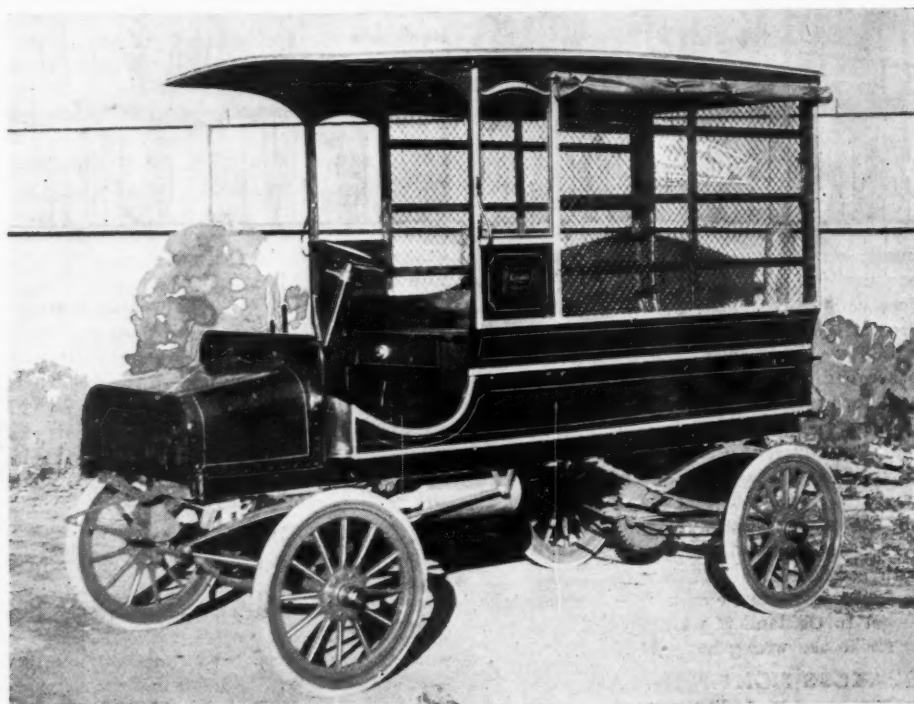
## TO ASK CONGRESS FOR LAW

During the coming session of congress efforts will be made by the commissioners of the District of Columbia to secure the amendment of the peace and order act of July 8, 1898, increasing from \$40 to \$100 the fine for carrying away the property of another without the right to do so, and also providing for imprisonment for 6 months, together with the maximum fine. Congress will also be asked to change the phraseology of the existing law so that "taking and carrying away" shall cover the movement of automobiles without the offender actually taking and carrying away the machine. These suggestions which the commissioners will make to congress are the result of a conference between Commissioner West, Judge Kimball, of the police court, and W. S. Duvall, president of the Automobile Club of Washington, and are a part of the campaign the club has inaugurated for sane legislation in regard to automobiles. The object is to secure a code of laws that will be as fair to automobilists as to pedestrians. The club is insisting on an amendment to the police regulations whereby persons guilty of tampering with automobiles, jumping in and out of cars left unguarded at the curb, manipulation of brakes or clutches, the tooting of horns, and other annoyances to which automobilists are subjected every day, be charged with disorderly conduct under the peace and order act, and subjected to a heavier fine than that now imposed. Heavier fines are also wanted for persons convicted of throwing stones and other missiles at passing automobilists. During the conference above referred to, the question of raising the speed limit for automobiles was also discussed. President Duvall set forth in detail the wishes of the club in this regard, and was informed that the subject would have due consideration by the commissioners.

Great consideration has been shown the club in the framing of these amendments.



# IN THE REALM OF THE COMMERCIAL CAR



LOGAN LIGHT DELIVERY WAGON WITH AIR-COOLED MOTOR

THE Logan Construction Co., of Chillicothe, O., has for the last 2 years been testing and experimenting with light delivery wagons and as a result of these efforts announces a new 10-horsepower air-cooled wagon with a load-carrying capacity of 1,500 pounds and weighing not more than 1,150 pounds. In order that the machine might be suited for a variety of light delivery work, a fairly high-speed ratio is used and a change speed set working on the sliding gear principle is installed, giving a fast and slow speed ahead and one reverse, the former ranging between 3 and 16 miles per hour. The company adopted the air-cooled motor not only because it has been proven perfectly satisfactory for the work, but because many prospective buyers are asking for such, dreading a water-cooled motor during the winter. This new machine has been under test for several months and has maneuvered with apparent ease a load 50 per cent in excess of its rating.

Most features common in placing an opposed motor crosswise beneath the bonnet are found in the design of this machine. A glance at the plan view of the chassis will reveal that the cylinders A are not placed as close to the front as usual and that a very long extension is needed on the starting crank. In the rear of the motor is a friction clutch much the same as the ordinary external band brake for coupling the motor with the sliding gear set within the case E. Perhaps the novelty of the entire construction appears in the transmission of power from the gear set to the rear axle, for instead of using shaft drive as is frequently used when a gear set is hung with its shafts parallel with the side pieces of the frame the Logan concern uses a short shaft F from the gear case, carrying on its rear end a bevel within the housing G, the bevel

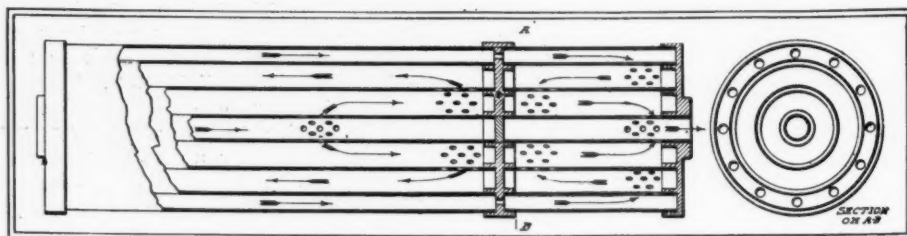
meshing with a similar bevel within the housing H. The latter is on a sleeve L on the stationary jackshaft K. From this sleeve the drive is by single chain to the center of the rear axle. In this design is all the advantages of a sliding gear set combined with those of single chain drive, this drive being preferred to a jackshaft extending across the entire frame and with double side chains for driving to the rear road wheels.

This power transmitting scheme calls for several cross parts in the frame construction, there being not fewer than eight pieces, as well as one light cross brace and other braces from the cross brace to the rear frame piece. The main side pieces of angle steel have a uniform wall thickness of  $\frac{1}{4}$  inch and have the channel walls respectively  $2\frac{1}{2}$  and  $1\frac{1}{2}$  inches wide. To these pieces all cross parts are riveted, with gusset plates for reinforcements. In spite of the numerous cross pieces the motor is not carried directly on them but supported through a pair of longitudinal members that bear upon the cross pieces, the longitudinal pieces being dropped and having the ends of the cylinder heads resting upon them. A little additional support is gained by having bolts in the cylinder heads pass direct through the main frame side pieces. Four full elliptic springs carry the frame, the front

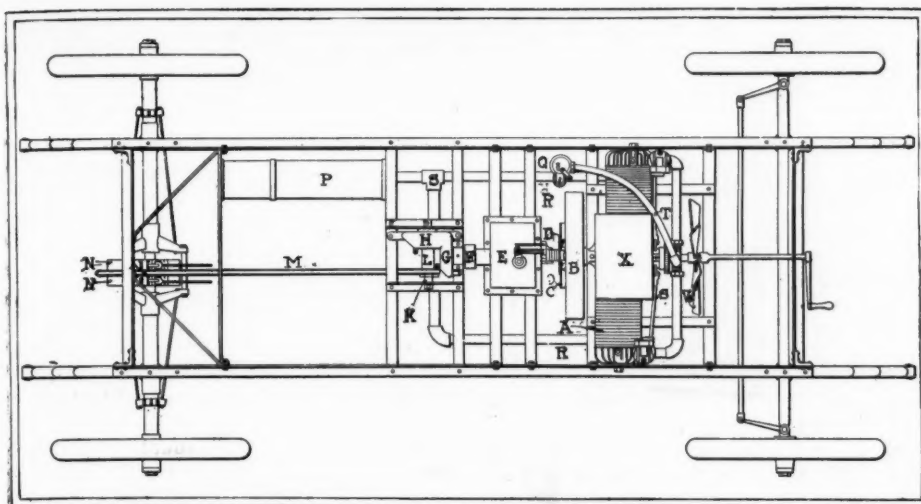
and rear pairs being the same size, 36 inches long,  $1\frac{1}{4}$  inches wide, with five leaves each. A double radius rod scheme saves both pairs from the pulling strain, leaving them to perform only a load-carrying duty. The rear pair is at the top, bolted directly beneath the frame side pieces and rests on seatings on the axles, with a radius rod connection at the front angle of the spring. This radius rod is made short, connecting with a bracket on the frame not far in advance of the front of the spring. It has a turnbuckle for adjustment. Longer radius rods protect the forward pair of springs, coupling with the frame midway of the front and rear road wheels and being attached direct to the axle inside of the spring seating.

Both axles are of tubular construction, the forward being slightly dropped in the center and carrying the usual Elliott type of steering knuckles, which are connected through rack and pinion steering gear with the steering column, set at about 15 degrees from the vertical. On this column are spark and throttle control levers. The rear axle is of Weston-Mott design throughout, and is  $1\frac{3}{8}$  inches in diameter and carries a spur gear differential. The axle housings enclosing the drive shafts are fitted with roller bearings and in the center carry a pair of opposing three-arm spiders between which are placed the differential and a pair of external double-acting Raymond brakes N on either side of it. Truss rods from brackets on the axle ends aid in supporting the spiders and through them strengthen the axle. Road wheels are 32 inches in diameter and carry 2-inch solid, side-wire, Diamond tires. The tread of the machine is standard and the wheel base 86 inches.

Air-cooling in the motor is accomplished by turning the outer surfaces of the cylinders and pressing over them circular copper flanges, placed  $\frac{1}{4}$  inch apart, each perforated to aid in the radiation of heat. The top of the crankcase is left open and in it is placed a hopper-like contrivance which prevents oil from the splash system of lubrication being wasted and at the same time permitting of heated gases from the interior of the case as well as from the cylinders, escaping. A rotary fan for additional cooling is carried on the front end of the crankshaft. Cylinder heads are made integral with the walls and are cooled by radiating metal flanges. Both sets of valves are mechanically operated and placed in separate cages bolted to the front side of the cylinder heads, the valve stems being vertical in each case. Bell cranks serve in transferring the power



MUFFLER USED ON LOGAN AIR-COOLED DELIVERY WAGON



PLAN VIEW OF CHASSIS OF LOGAN COMMERCIAL WAGON

from the push rods to the valve stems, one end of the crank being pivoted to the end of the push rod S and the other resting on the top of the valve stem. The camshaft is in the top part of the crankcase. A regular float feed carburetor shown in the plan illustration at Q connects through a curved pipe T, that branches in front of the crank case and connects with both inlet valves, the mixture traveling an equal distance to each pair of cylinders. Separate exhaust pipes R lead from the exhaust valve ports and unite at the union S, passing from this direct to the muffler—this piping construction is designed to keep the hot gases as far as possible from the cylinders. Jump spark ignition is used and in lubricating a pressure sight feed oiler is made use of, the oil tank being placed under the hood where the motor heat prevents its congealing in cool weather. Pressure for it is taken from the hot exhaust gases, which also aid in keeping it warm and at an even temperature. The connecting rods are fitted with ring oilers, both of the end crankshaft bearings are provided for and a separate lead enters the top part of the crankcase through the cooling hopper, it maintaining an even level within the case from which the cylinders receive a part of their supply.

A common band clutch connects the gear box with the flywheel B of the motor. On the flywheel is a broad flange shown at C and over this acts the brake or clutch band D. To the ends of the band are attached a pair of fingers, which are pivoted at their centers and by forcing a cone between the bottom arms of these the clutch band is tightened. The transmission gear works on the sliding principle, having a main and countershaft with drive on high speed direct along the former. The gear ratio is about 5 to 1. The peculiarities of the final drive have been referred to. The short jackshaft K is carried on a pair of frame pieces and is surrounded by a bronze bushed sleeve L to which is attached the bevel within the casing H and also the sprocket for the final single chain drive.

A variety of body lines are shown, some being of the low side variety to which any design of carrying compartment can be attached. Others are of the canopy top, wire-side style and a few of the enclosed type with rear entrances are shown. The control in all is the same, the features of

it being steering wheel with throttle and spark levers, and besides these, speed change, clutch and braking levers and pedals. The bonnet is hinged to the front of the dash and has a screen front, but instead of the front of it being cut away toward the top it is straight and the hood perfectly plain.

In addition to this model the Logan company has ready a 2-ton water-cooled truck which is fitted with a two-cylinder opposed motor rated at 30 horsepower. The cylinder bore and stroke are  $5\frac{1}{2}$  and 6 inches. The general design of this machine follows that of the company's touring machines with the sliding gear set placed at the side of the motor and drive direct from a sprocket loose on the crankshaft to a jackshaft further to the rear and from the jackshaft double chains connect to the road wheels.

#### JUST WHAT IT COSTS

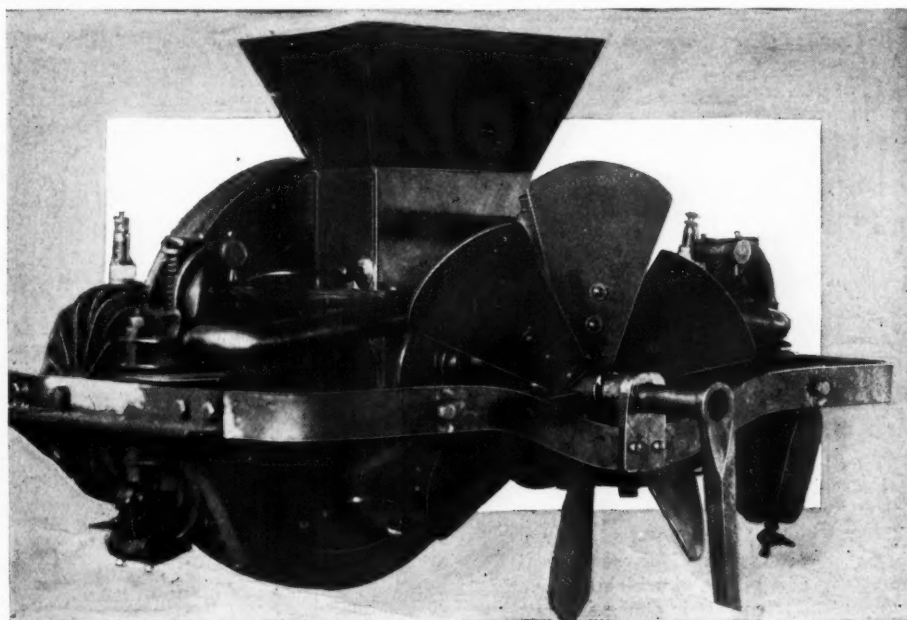
Tables showing the exact cost of operating a motor delivery wagon during the months of July, August and September have been prepared by the Joseph Horn Co., of Pittsburg, Pa. The tables were made up direct from the running book of the driver and show not only the amount

of oil and gasoline required but the distances traveled, number of packages carried, number of trips made, as well as the number of those not made and a few averages on the work done. The machine that performed this work was a regular Oldsmobile delivery wagon that was delivered to the Horn company July 10 and put into commission on the following day, the period covered being from that date until October 1.

It must be understood that during the test the machine was not operated by an expert driver, but by one of the same class as is obtainable for such work. The attention and care given the wagon was as a consequence the same as any concern can give.

A glance at the tables shows that during the month of August the machine covered more miles than in July or September, but that fewer packages were delivered, due to the Horn concern changing the vehicle's route twice a week to different sections of the city where the delivery was light but the distances great. The routes traveled were among the hilliest in the Smoky city, but not on a single occasion did the wagon fail in its service. The exact duration of the following record was 65 days:

	Cost of material	Factory repairs at 50c an hour	Machine oil at 1c a gallon	Engine oil at 17c a gallon	Gasoline at 10c a gallon	Total
1905						
July	\$.055	\$7.00	\$0.22	\$0.92	\$11.27	\$20.56
Aug.	3.05	2.75	.22	.92	14.49	21.43
Sept.	3.92	4.62	.22	1.16	17.22	27.14
Totals	\$7.52	\$14.37	\$0.66	\$3.00	\$43.98	\$69.13
		Packages delivered	Miles run	Trips made	Trips lost	
July		2,772	568	33	0	
August		2,276	715	47	0	
September		3,156	633	50	0	
Totals		8,204	1,816	130	0	
		Av. cost per package	Av. cost per mile	Av. cost per trip	Av. cost per trip	
July		\$.0074	\$0.044	\$0.6230		
August		.0094 ½	.030	.4560		
September		.0086	.043	.5430		
Average cost per package, \$.0084; average cost per mile, \$.0380; average cost per trip, \$.5320.						



TEN HORSEPOWER AIR-COOLED MOTOR IN LOGAN WAGON

# Commercial

**Used in Albany**—W. W. Whitney & Co., of Albany, N. Y., have received a couple of Knox 8-10 horsepower machines for regular use. Solid rubber tires are fitted to each.

**Canada in Line**—A branch of the Intercolonial Railroad in Eastern Canada is to be fitted with gasoline motor cars, the passenger service on it not being sufficiently heavy to warrant the frequent running of steam trains.

**As a Hose Wagon**—The Howe Engine Co., of Indianapolis, Ind., has recently shipped to Hopedale, Mass., an electric hose wagon for the fire department of that city. The concern is at the present time completing a 32-horsepower gasoline motor for propelling a fire engine, which the company declares will be one of the first of its kind in this country.

**In Hack Service**—An Oldsmobile bus, the latest product of the Olds Motor Works, Lansing, Mich., has been placed in service by Carr & Son, proprietors of a hack line in that city. The bus is very complete in its appointments and seats twelve persons. It is entirely enclosed with curtains with windows, and the driver's seat is similarly protected. It is lighted by electricity furnished by storage batteries and heated by a system of piping from the exhaust.

**Foiled Firemen**—A big electric truck operated by a Cleveland brewery showed something of its power the other day when called upon by the Cleveland fire department to extricate a heavy steam fire engine which was stuck in the mud while on a run. The combined efforts of four strong horses had failed to get it out. About that time the big truck came along and the operator offered his services which were accepted with some doubts on the part of the firemen. It didn't take 2 minutes for the truck to shake the 4-ton steamer out of a foot of mud.

**McCrea Plans**—The McCrea Motor Truck Co., Cleveland, O., exclusive selling agent for the Champion commercial motor vehicles, made by the Champion Wagon Co., of Oswego, N. Y., is making great preparations for the trade during the coming season. This latter concern has for 1½ years been making electric trucks of different sizes. Some forty of these are now being used by the United States Express Co. and with other firms. The factory has a capacity of 400 per year, the sizes ranging between 500 pounds and 12 tons load capacity.

**Tackles Big Game**—It is stated that a Detroit automobile company is about to make a spread in business by putting the automobile squarely into competition with the railroad, the trolley car and the livery stable. The statement is that the concern is already preparing to work out of Detroit to the suburban towns and that if the scheme works the plan will be pushed in other sections of the state. If the company starts its system Kalamazoo will be one of the first places at which the experiment will be tried. It is expected that the populous and progressive southwestern



DAYTON PARCEL DELIVERY

part of the state will furnish the best field for experiments, the like of which have been tried in only a few sections of the United States.

**Dayton Likes Them**—The use of the commercial automobile in Dayton, O., is still young but so far is meeting with good results by those using light machines. Morgan & Wright's branch house and repair depot has used a light car with much satisfaction for some time. The company keeps the machine in a garage when not in use and the monthly expenses—oil, gasoline, washing, repairs and other incidentals—amount to \$12 per month. The November bill amounted to \$12.30. The machine is in daily use attending to the various customers of the firm and carrying freight to and from the depot, which, however, consists chiefly of goods required by the branch and others being returned to the factory. Another commercial machine used is a 1½-ton Knox wagon in the service of Brown Bros. This machine has a load-carrying capacity of 1,500 pounds and the average cost of gasoline and oil is 1 cent per mile. The wagon averages 50 to 75 miles per day and has maintained this average since June, 1904. Repairs thus far aggregate \$100, which includes a pair of new solid tires for the front wheels. The rear tires show a good deal of wear but are good for another year. The busi-

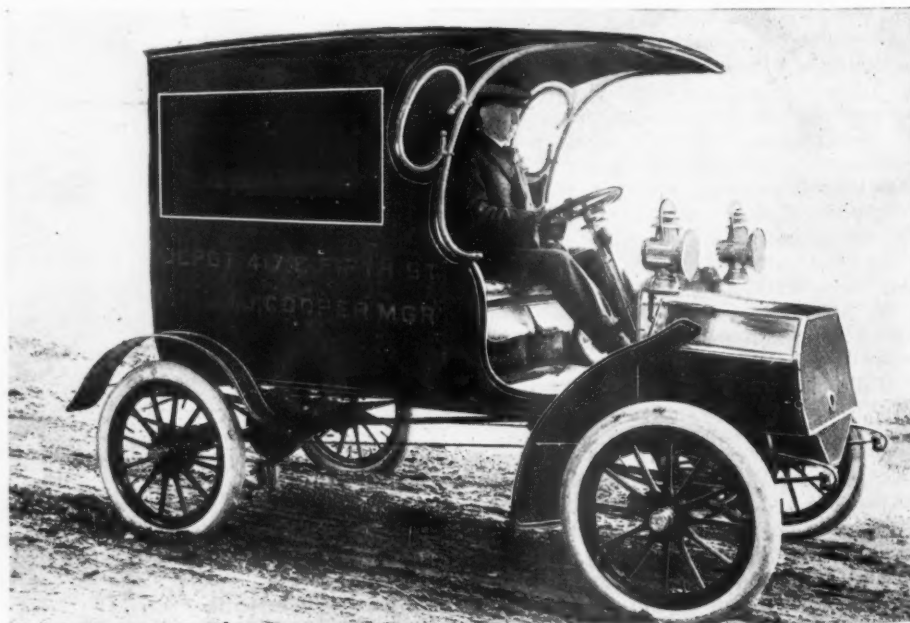
# Mile Stones

ness of the concern is general delivery work in which express parcels and parcels from local stores comprise the most of the load. Speed is one of the essentials of this machine and the company has found that it is owing to this particular feature of it that the work has been so successful.

**C. & A. Sincere**—That the Chicago & Alton Railroad is sincere in its intentions of installing motor cars of the gasoline type for suburban uses is proven by the delivery at Bloomington, Ill., of several gasoline motors intended for this service. The company hopes to use these specially in suburban work, in which sphere the electric trolley works havoc with regular railroad traffic.

**Testing**—As the result of 3 years' experimenting in the construction of heavy electric trucks, the Fuller Mfg. Co., of Detroit, Mich., will try out during the next few weeks a large 5-ton electric truck. A feature of it will be the using of a gasoline engine to drive a dynamo for providing current for the electric motors driving the road wheels. As soon as the demonstration shows the construction of the machine to be suitable for all classes of work a company will be organized and the manufacture of machines commenced.

**In Pittsburg Fire Service**—Pittsburg is soon to try an automobile chemical engine in fire fighting. The machine, which has been ordered by the Banker Bros. Co., will be a 45-horsepower Pierce chassis with extra long wheel base. It will have two 250-gallon chemical tanks, six small fire extinguishers, ladders, hose and the usual equipment of a chemical wagon. There will be room on the footboards for ten firemen and a chauffeur. The car will have sufficient capacity to fight small fires or big ones at the start and its speed, 40 to 60 miles an hour, will give it a big advantage in getting to remote suburban districts in a hurry.



MORGAN & WRIGHT'S DAYTON DELIVERY CAR



### USING KEROSENE

Lansing, Mich.—Editor MOTOR AGE—Will you let me know through the columns of the Readers' Clearing House what changes must be made in the ordinary carburetor in order to use kerosene? I use a Kingston carburetor, with float in a separate chamber, and would like to know exactly what changes I would have to make in order to use kerosene. I understand that gasoline will have to be used in starting the machine and my intentions are to have the carburetor connected with the gasoline and kerosene tanks, using a switch.—H. A.

In using kerosene for a motor it is advisable to use a separate needle valve, as kerosene requires an opening of from 30 to 50 per cent over gasoline. Even though the needle valve is adjustable, this adjustment would have to be made in switching over from gasoline to kerosene. The motor can be started with kerosene if hot; if cold, gasoline must be used.

### WIRING OLD BATTERIES

Hampshire, Ill.—Editor MOTOR AGE—In a dry battery for an automobile, two sets of five cells each are used. Each set is connected in series. As I understand it this gives the total voltage of five cells and the amperage of one. As the cells grow weaker the two sets are connected in parallel to the same binding post, giving the voltage of five cells and the amperage of two. After they became still weaker I thought I could make still further use of them by connecting one set in series and one set in parallel and connecting both sets to the same binding post on the coil. I then tried the ammeter on the parallel set and it ran the needle way up, so I thought I had it, but the coil failed to buzz. Can you explain my trouble? This is the way I connected the cells.—See figure 1.—GEORGE W. COOK, JR.

The trouble has been the result of a short circuit in the batteries. Referring to sketch of your writing, figure 1, 1, 2, 3, 4 and 5 are connected in parallel, while 6, 7, 8, 9 and 10 are connected in series. Connecting N 6 with N 1, would be the same as connecting 6 with 5, as the negative and positive wires are all in parallel; therefore, 1, 2, 3 and 4 would be cut out and the positive on 5 becomes negative. By using an ammeter with the positive wire on P 10 and the negative wire on N 5, it will show the maximum voltage. Connect the positive wire of an ammeter to P 10 and ammeter negative to P 5—as positive on 5 becomes negative—and the voltage of 5 and 10 will be indicated, usually about 4 volts for the two ordinary dry cells. To prove that the positive becomes negative on 5, connect the ammeter positive with P 5, and ammeter negative with P 10 and the ammeter needle will move back against the left hand stop. Immediately upon connecting P 10 with P 5 it produces

a short circuit of the batteries. This reversal of negative and positive takes place at 1 and 2 by connecting 5 and 10, but this connection produces a short circuit in the batteries, the seat of trouble. Referring to figure 2—two sets of five batteries in series, connected in parallel—with positive and negative at A and positive and negative at B will produce the maximum voltage of the combined batteries. If no voltage is indicated with this it is time to recharge or get new cells.

### FREEZING POINT

Linden, Ia.—Editor MOTOR AGE—Please state in MOTOR AGE how low a temperature the pure calcium chloride solution will stand in an automobile without freezing to do damage. I refer to the solution published in Motor Age some time in the early fall;  $4\frac{1}{2}$  pounds to the gallon of water.—E. H. MALLORY.

Watertown, S. D.—Editor MOTOR AGE—Now that cold winter weather is here, the danger of frozen radiators is with us. Can you give the formulae of some composition that can be used in the radiators which will prevent water freezing and not injure the interior of the water jackets or pipings of the motor?—J. A.

A solution containing 5 pounds of calcium chloride to each gallon of water will freeze at 47 degrees below 0 Fahrenheit. Wood alcohol is being extensively used. This costs about 90 cents a gallon at wholesale drug houses. A solution consisting of  $\frac{2}{3}$  water and  $\frac{1}{3}$  wood alcohol will protect a motor to a little below 0.

### FINDING SAND HOLES

Galesburg, Ill.—Editor MOTOR AGE—During the last 3 months I have had some novel experiences with my runabout. I would leave the garage early in the morning with the car running well for perhaps an hour, when suddenly it would lose power and finally stop. Then commenced a Sherlock Holmes tour of the electric system, carburetor and valves, with poor results. At night I would have it overhauled, the crankshaft removed, and the

inner walls of the cylinder examined, but no cause found for the trouble. Half a dozen times the same trouble confronted me and as often the garage men overhauled the machine, as often did it start off well in the morning and suddenly lose power at inopportune times. Finally, almost distracted with the machine, I placed it in the hands of a repair man, with instructions to keep it and run it until the trouble was discovered. The discovery soon came. The first day the water jacket was tested, when it was found that a minute stream of water was issuing through the inner walls against where the piston would operate. The hole had evidently been formed by a grain of sand in the casting and had not appeared until after it had been used for some time. The cylinder being horizontal in the car, the water leaked into the bore in sufficient quantities to interfere with the workings of it. I had a new cylinder casting put in and the car has worked perfectly ever since. Can you give me the nature of the tests of water jackets before a machine is shipped from the factory?—PHYSICIAN.

The tests of water jackets vary with different manufacturers. Usually the first thing done to a cylinder casting when it comes from the foundry is to test the jacket. All holes are plugged with water-tight gaskets, water is introduced into the cylinder through some convenient place, and a pressure gauge is fitted at another place. Water is forced into the cylinder by a high pressure pump up to 100 pounds or over. If there are holes in the casting they are readily discovered. This leak is sometimes caused by the slag in the molten metal at the foundries, although the percentage of castings scrapped for this reason is very small. All concerns have their own methods of testing jackets and some builders scrape the outer water jacket walls in the hope of removing sand grains from the casting.

### LOCATING AIR LEAKS

Albany, N. Y.—Editor MOTOR AGE—I am not going to bother you with questions this time, but write to tip off a couple of good things I have stumbled across and which I think may be of benefit to the readers of the clearing house. One of them is a sure way of locating a puncture. Of course, when you have a good-sized hole in the inner tube, it is no trick at all to find where the air escapes—it's the little pin pricks that make you scratch your head and worry. My scheme is to take aniline or other colored fine powder—a small quantity will be enough—and blow it into the inner tube. Then when you look for the pin hole puncture you simply blow up the tube, take a wet cloth and run it over the rubber. The dye is expelled through the puncture by the force of the air and the rag moistens it and causes it to leave a brilliant stain, which marks the seat of the trouble. My other tip is an easy way to test the quality of lubricating oil, which, as you undoubtedly know, should be neither acid nor tacky. Oil of the right sort is discovered by placing a drop on a polished copper plate. If it remains clear and keeps its color for several days it is O. K., but if it is acid it will turn green. If tacky it can be told by rapidly drying.—R. B. S.

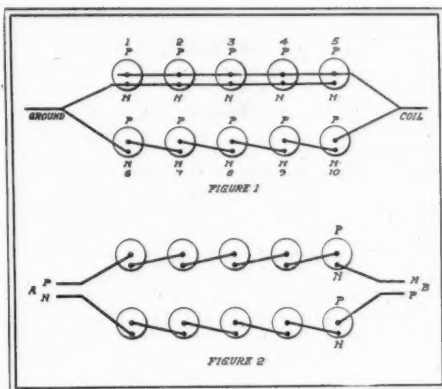
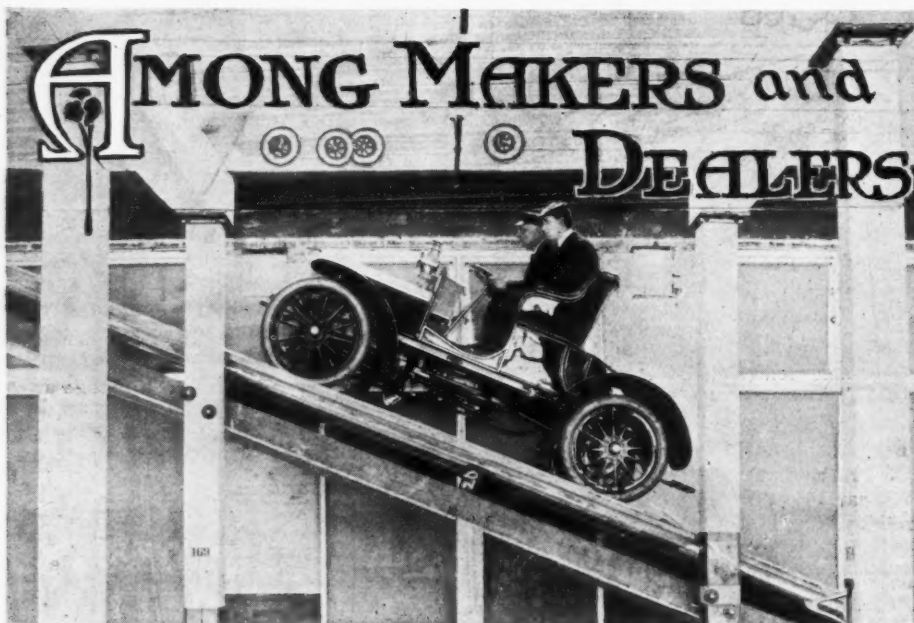


DIAGRAM FOR WIRING OLD BATTERIES



TESTING A COMPOUND ON A 40 PER CENT GRADE AT THE MIDDLETOWN FACTORY

**G & J Branch**—The G & J Tire Co., of Indianapolis, is about to establish a branch in Philadelphia.

**New Salesroom**—Hatch & Co., New York agents of the E. H. V. Co., of Middletown, Conn., have established a salesroom at 1655 Broadway.

**Maxwell Improving**—The Maxwell people are refitting the old building in Detroit formerly occupied by the Olds company. Extensive improvements are being made in the building.

**Bobs Up Again**—You cannot lose E. J. Pennington. This time he hails from Grand Rapids, Mich., and he is endeavoring to interest Toledo capital for the purpose of establishing an automobile plant in that city.

**Cameron Plant Moved**—The Cameron car, which has been manufactured at Pawtucket, R. I., for the last 3 years, will hereafter be made in Norfolk, Va., its inventor having organized a company with \$200,000 capital in the southern city.

**How Compounds Are Tested**—Among the many devices used by the E. H. V. Co. for testing Compound cars at its Middletown factory, is a 40 per cent grade, up which every car turned out must make its way without difficulty, before it is turned over to a customer. The grade is built of wood and is so arranged that cars cannot run off the edge of the roadway. It has been in use for a year or more.

**Plug Maker**—A charter has been granted to the Albright Mfg. Co., of Columbus, Ga., successor to the Camp Cycle Co., for the purpose of manufacturing the Albright spark plug, as well as numerous other accessories. The final organization of the company took place last week, L. A. Camp being elected president, E. P. Dismukes, vice-president; Paul Dismukes, secretary and treasurer and J. J. Albright, superintendent. The paid in capital stock is \$14,000, with privilege of increasing to \$100,000. A large brick building with over 15,000 square feet floor space has been leased. Anticipating the final organization of the Company, orders were

placed some time ago for machinery, all of which is now here and is being installed.

**New Carbureter**—The Missnack Mfg. Co., of Detroit, is about to market a new carbureter, the invention of a local expert named Fishback.

**Stoddard-Dayton Agencies**—The Dayton Motor Car Co. announces the following list of its agencies for 1906: Chicago, McDuffee Automobile Co., 1449 Michigan avenue; New York, Stoddard-Dayton Agency, 1853 Broadway; Philadelphia, Hamilton Automobile Co., 206 North Broad street; Pittsburg, Central Automobile Co., 5989 Centre avenue; Buffalo, J. A. Cramer, 737 Main street; Boston, Randliff Motor Car Co., 24 Columbus avenue; St. Louis, Colonial Automobile Co., 3944 Olive street; Omaha, Deright Automobile Co., 1119 Farnam street; Cleveland, H. S. Moore, 160 Crawford road; Toronto, Automobile & Supply Co., 24 Temperance street; California, Norman W. Church, Hellman building, Los An-



## LATE INCORPORATIONS

**Boston, Mass.**—The Penn Automobile Supply Co., of this city, has been incorporated with a capital stock of \$10,000.

**New York City**—The Metropolitan Auto Co. has been incorporated with a capital stock of \$25,000.

**Newark, N. J.**—The Austin Auto Co. has been incorporated with a capital stock of \$25,000.

**Homer, N. Y.**—Among recent incorporations is that of the Baker Gear Co., with a capital stock of \$70,000.

**Newark, N. J.**—The Calvert-Zusi Auto Co. has been incorporated with a capital stock of \$20,000. Registered office, 213-215 Clinton avenue.

**Atlantic City, N. J.**—The New Jersey Touring Car Co. has been incorporated with a capital stock of \$60,000. The object of the company is to manufacture automobiles.

**Philadelphia, Pa.**—Among the recent incorporations is that of the General Specialty Co., which intends to engage in the manufacture of building hardware and fittings, metal furniture, wagon and automobile fittings, etc.

geles, Cal.; Minneapolis, Haynes Automobile Co., 220 South Sixth street; Denver, C. M. Wood; Indianapolis, Fisher Automobile Co., 330 North Illinois street.

**Cooper to Change**—Tom Cooper told a friend in New York that he was to leave the Matheson Motor Car Co. and go with Barney Oldfield in his vaudeville racing act on the stage.

**Rands Moves**—The Rands Mfg. Co., formerly the Wheeler Mfg. Co., maker of body tops and other automobile specialties, has just moved into its new quarters, corner of Macomb and Beaubien streets, Detroit. The building is well lighted on four sides covering an area 150 by 75 feet with two floors.

**New in Detroit**—A new accessory and sundry company has been organized in Detroit with W. E. Metzger president. The active management is in the hands of Messrs. McLean and Howard. The firm occupies the upper floors of the Metzger building. Besides carrying a full line of sundries the company will manufacture several specialties.

**Energine Officers**—The Energine Co., which was incorporated in Cleveland several weeks ago, has completed its organization by the election of William Greif as president, R. P. Beardsley vice-president, and Frank B. Many secretary and treasurer. The company has a capital stock of \$500,000 and will build a plant in Cleveland for the manufacture of Energine.

**To Make the Carter**—Byron A. Carter, of Pontiac, Mich., has organized the Motorcar Co. of Detroit, to manufacture the Carter car embodying his friction transmission. The first model is nearly completed and a factory is being equipped. The officers of the company are: Frank T. Canghey, president; Fred Postal, first vice-president; Byron J. Carter, second vice-president; R. A. Palmer, secretary; Harry R. Radford, treasurer. The factory is at 230 Twenty-first street, Detroit.

**To Interest French**—E. V. Hartford, president of the Hartford Suspension Co., sailed for Europe last week. He is now going over to sell the foreign makers the license to make use of the device as it will be marketed in 1906. The new Hartford suspension is now fitted with a self-adjusting device, which requires no tightening up as in the past. There is a five-prong spring washer that takes up all of the inside wear, and the whole is held in place by a split nut of Mr. Hartford's own design. The sample has one double and one single arm, instead of two single arms. This makes it impossible for the arms to shear off.

**Purdue's Testing Plant Working**—Purdue university's new automobile testing plant, the latest innovation in the mechanical engineering department, has had its initial tryout, and it was found to be in perfect working order. Tests were run on Prof. Arthur Goss's Reo car, and the results obtained were according to expectations. The 16-horsepower machine, when driving at its maximum power, was always under perfect control of the testing force. The first test was a mild tryout, as the plant is capable of testing touring and racing cars of the highest power. After a few minor changes are

made in the arrangements of the plant several high-power 1906 machines are to be brought in for tests.

**Franklin Man Dies**—Harry Simpson, assistant treasurer of the H. H. Franklin Mfg. Co., died at his home in Auburn, N. Y., last week at the age of 27 years.

**Increases Force**—The Pope Motor Car Co., Toledo, O., has added about 150 men to its working force, in view of the new addition having just recently been completed.

**Burning Question Solved**—They have an artificial coal mine at the Packard plant in Detroit, the company having taken the precaution to lay in a stock of 3,000 tons of coal for a reserve supply.

**Nearly Ready**—The new factory building of the American Locomotive Automobile Co., which is to build the Berliet car in Providence, R. I., is nearly completed. The plant will be 375 by 63 feet.

**Ode by Owen**—Ralph R. Owen, of Cleveland, who secured the first 1906 Oldsmobile four-cylinder car delivered, has written the factory stating he has not made an adjustment since getting it and that he drove from Lansing to Detroit over the muddiest kind of roads without the engine making a skip.

**Unique Party**—A party of forty New York city automobilists spent Saturday in Bridgeport, Conn., as the guests of the Locomobile Co., of America. John F. Plummer, Jr., the New York manager of the Locomobile company, conducted the party to Bridgeport by private car over the N. Y., N. H. & H. R. R., and on arriving at their destination the party was taken to the Locomobile factory, where the day was spent going through the plant. All of the visitors on the trip were either purchasers of 1906 Locomobiles or prospective purchasers.

**Car Wanted**—The Eastern Automobile Co., of 326 North Broad street, Philadelphia, agent for the Peerless Motor Car Co. and J. Stevens Arms & Tool Co., has so outgrown its present quarters that it has given out contracts for building an addition to its garage and salesrooms. The new building is nearly three times the size of the present quarters and has more than twice the frontage of the present building on Broad street. There has been a change in the personnel of the company, A. B. Cumner resigning and L. Howard Smith, of Philadelphia, entering the firm. The company is now looking for another car to fill out its line for 1906.

**Thomas In a Hurry**—Without waiting for its completion, the E. R. Thomas Motor Co., of Buffalo, occupied a part of its new factory during the week. Rather than delay shipment, the expert mechanics were placed at their benches on the first floor of the new concrete building before all of the floor had been laid, and consequently visitors were given a sight of automobiles being set up within half a dozen feet of where other workmen were laying a concrete floor. While cars were being finished on the first floor, the last touches were being put on the roof. The new building is in the shape of an irregular letter L, and is 190 feet long by 195 feet, and is three stories in height.

## BRIEF BUSINESS BITS



**Chillicothe, O.**—O. M. Houser has opened a garage on Mulberry street.

**Pontiac, Mich.**—The board of trade is considering the establishment here of an automobile tire factory.

**Atlanta, Ga.**—The Piedmont Motor Car Co. has secured the local agency for the Marmon car in that city.

**York, Pa.**—Theodore R. Helb is to build an automobile garage at the corner of King street and Howard avenue.

**Baltimore, Md.**—Jesse Lippencott Casard, Jr., has acquired the agency for the Ford car here and will open in the Gill building as soon as it is completed.

**Fostoria, O.**—The Fostoria Motor Car Co., will shortly be formed for the purpose of manufacturing automobiles. The capital stock of the company is given as \$300,000.

**Indianapolis, Ind.**—Having taken the Indiana agency for the Marmon car, the Gibson-Short Cycle & Auto Co. has greatly enlarged its establishment and expects to make still further extensions.

**Rochester, N. Y.**—A. L. Mora, of this city, will soon start an automobile factory in the village of Newark, if arrangements can be made with the board of trade. Alterations have already been started on a building for Mr. Mora.

**Newark, N. J.**—The building at 213-215 Clinton avenue is to be converted into an automobile garage. A deal has been consummated whereby the Newark Garage & Repair Co. becomes the owner of the property. George L. Paddock, of the Auto Vehicle Co., is the president; L. B. Zusi treasurer, and Andrew Schwind is the secretary and general manager. While this will be the holding company, and will occupy the major part of the building, two other automobile companies are connected with the establishment. They are the Auto Vehicle Co., which will handle the Thomas Flyer, and the Calvert & Zusi

Automobile Co., which will handle the Winton in that section of the state.

**Baltimore, Md.**—An agency for the Pierce car has been established by the Southern Auto Co.

**St. Louis, Mo.**—The Van Automobile Co., 4706 Washington avenue, will handle the Marmon car in this city.

**Boston, Mass.**—C. H. Saunders has secured the agency for the Moline line of cars, which are well known in the west, but have as yet to be introduced here.

**Tacoma, Wash.**—The Reliable Automobile Co., agent for the Packard, Cadillac and Winton cars, has opened a garage and general repair shop at 111-115 South Eighth street.

**Newark, N. J.**—The Jackson Automobile Co. has established a branch in this city, which will act as general sales agent for the agents of New York, New Jersey and Pennsylvania. The branch is in charge of C. W. Oathout.

**Boston, Mass.**—Frank D. Stranahan, manager of a Tremont garage company, has decided to add an automobile supply department to his station. The Prestolite tank agency, which has been in charge of P. A. Sheehan for the past year, has been turned over to Stranahan, who has also another.

**Indianapolis, Ind.**—The Elston Automobile Co. has closed its establishment and S. W. Elston has accepted a position as manager of the Indiana Automobile Co. This company has completed arrangements for the agency of the Oldsmobile, which was recently relinquished by the Fisher company. The Indiana company will also handle the Cadillac, Winton, Franklin and Autocar.

**Worcester, Mass.**—An addition 100 by 60 feet has been completed by the L. W. Pond Machine & Foundry Co. and the force at the factory has been increased. The manufacture of metal planers has been discontinued. The space which has been devoted to this industry will now be devoted to automobile work. The company is preparing for a first-class garage and repair department.



RALPH OWEN OF CLEVELAND, O., IN HIS NEW MODEL 8 OLDSMOBILE

**OFFICERS**

ISAAC B. POTTER, President.  
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CHARLES E. DURYEA, First Vice-  
Pres., Reading, Pa.

JOHN A. HAWKINS, Second Vice-  
President, Pittsburg, Pa.

FRANK A. EGAN, Secretary,  
132 Nassau St., New York.

FREDERICK B. HILL, Treasurer,  
32 Binford St., Boston.

**National Headquarters**  
Vanderbilt Building, New York

# American Motor League



**THIS LEAGUE**  
Is Now Collecting Route Infor-  
mation

covering all automobile routes in the important states and will publish road books for motor car users as fast as complete information is received. The A. M. L. is the only organization engaged in this work, and it invites the co-operation of all persons interested. For full information and membership blanks address American Motor League, Vanderbilt Building, New York City.

## Reduced Railroad Rates

to all members of the AMERICAN MOTOR LEAGUE who travel

## to the City of New York

to attend the meeting of the A. M. L.—to which all automobilists are invited—beginning Monday, January 15, and ending Saturday, January 20, both dates inclusive. As this is the

## Week of the Automobile Shows

our members will have an opportunity of taking part in convention work and of enjoying the gala week at the same time.

**Important Notice**—This reduced rate benefit is for league members only. Persons wishing to join the league and to receive this benefit should immediately send names and addresses—plainly written—with 1 year's dues—\$2 for each applicant. The railroad associations will not grant reduced rates in aid of an automobile show or any other purely commercial enterprise. They will recognize only those certificates which are held by league members.

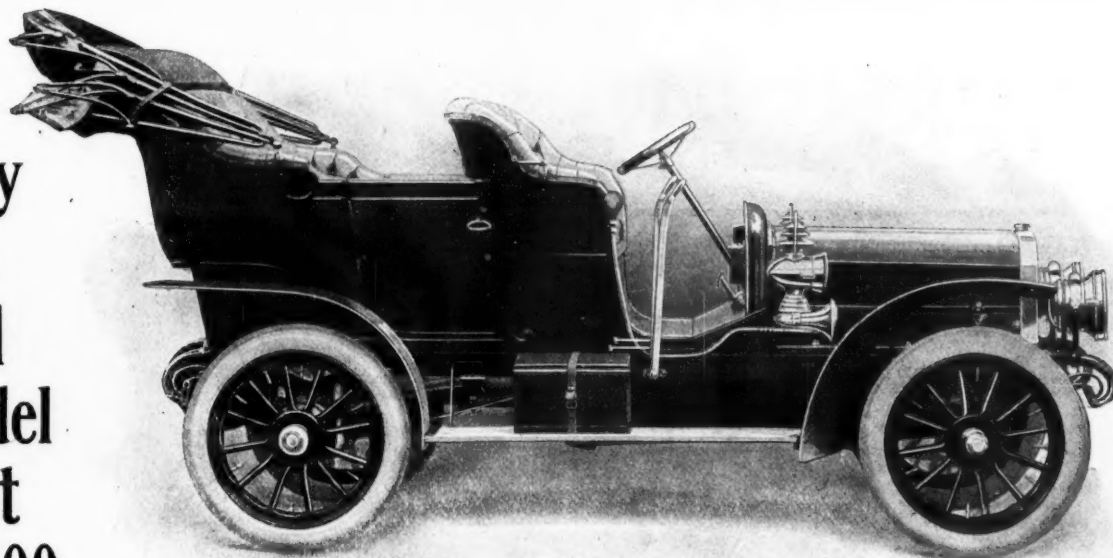
Each member who comes to these meetings should bring his membership ticket. This will save the trouble and delay of searching membership records. Every expired membership should be renewed. Full printed information will be sent on request. Address

## AMERICAN MOTOR LEAGUE

Vanderbilt Building, New York, N. Y.

# WINTON MODEL-K

Why  
We  
Sell  
Model  
K at  
\$2500



"I don't understand why you sell Model K at \$2500. No other car is in its class at less than \$3500, and I wouldn't trade my K most cars that sell as high as \$5000."

That is a boiled-down summary of the verdict of practically every purchaser of the new Winton Model K.

And it states the truth in a nutshell, too.

Now we'll tell you why.

1.—This company is proud of its reputation. It was the first company in America or elsewhere to market a really high-grade car at \$2,500, and it thereby set the pace that has made it America's foremost producer of motor cars. And it intends to stay ahead.

2.—We are making **only one model**. To produce two or more models divides the possibilities of real success. No man can serve two masters, and no automobile manufacturer can make two or more models at the same time and do himself justice. To **make one model well** is a supreme achievement.

3.—Our superb facilities—the largest and best equipped touring car plant in the world, and the fact that we **make for ourselves a greater proportion of the parts** used in the complete car than does any other touring car manufacturer, mean **economy of production**, by **CUTTING OUT MIDDLEMEN'S PROFITS**.

4.—For 1906 we set the price of \$2,500 first, and then designed and constructed absolutely the best motor car which we, with our great facilities and long experience, could produce at a profit. Model K is the result. And—

**Model K is unquestionably without an equal on the market.**

**DON'T** compare it with other \$2,500 cars; you would be wasting your time.

**Compare it with cars selling from \$3,500 to \$5,000.**

We'll risk our chances on your verdict.

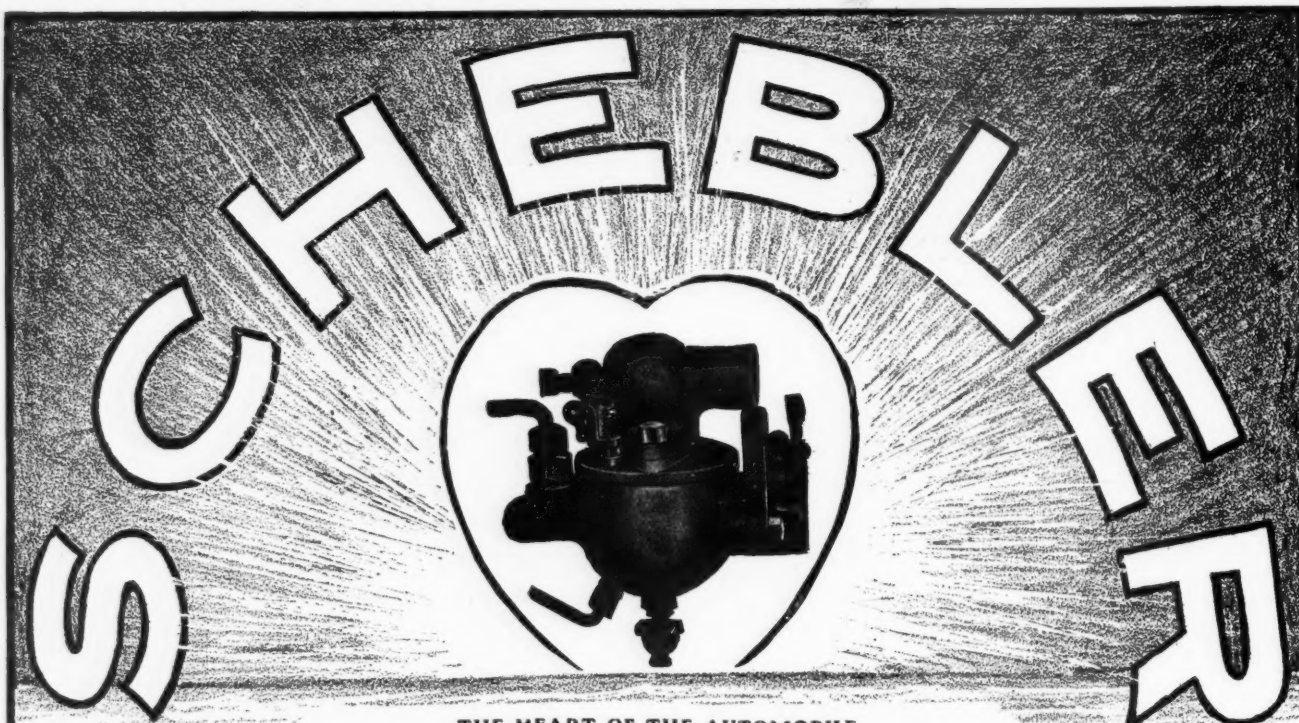
**MODEL K WINTON.**—Four vertical, water-cooled cylinders, 30 H. P. or more. Quiet running. Abundant reserve power. Velvety, non-jar, non-shock, non-breakable transmission. Flexible speed control. Shooting oiler. Exclusive Twin Springs. Easy Riding. And every other feature that a real high-grade car should have. \$2500 f. o. b. Cleveland.

**The Winton Motor Carriage Co.**  
**CLEVELAND, O.** Member **U. S. A.**  
A.L.A.M.

CATALOG NO. 2 IS READY

We will exhibit in New York at the Madison Square Garden Show **ONLY**, January 13-20, 1906

# THE DAWN OF CARBURETOR PERFECTION



THE HEART OF THE AUTOMOBILE

*More than 80 of the largest Marine and Automobile Engine builders in the U. S. and Canada are equipping their motors with Schebler Carburetors. They all TESTED them first in competition with the world*

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Ellsworth Foundry & Machine Shop.....Ellsworth, Me.  
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Chanslor & Lyon Motor Supply Co.....  
.....503 Golden Gate Ave., San Francisco, Cal.  
Los Angeles Auto Co.....Los Angeles, Cal.  
McCulloch & Boswell.....Winnipeg, Man.  
Wilson & Co.....Ottawa, Ontario, Can.  
Canada Cycle & Motor Co.....Toronto Junction, Can.  
Schuman Carriage Co.....Honolulu, T. H.  
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# FRANKLIN



Type "D"

FOUR-CYLINDER TOURING CAR. Shaft drive. Sliding gear transmission. Three speeds and reverse. New and perfect disc clutch. Four cylinders. Air-cooled. Side doors. 5 passengers. 100 inch wheel base. 1800 pounds. 20 "Franklin horse-power." 45 miles per hour. Full head and tail-light equipment. \$2800. f.o.b. Syracuse.

This car is remarkable for its great surplus power, quiet running, easy riding and wide speed range on the throttle. It holds high speed under full load for an indefinite run, and meets full touring requirements as completely as most cars of double its power rating, as far greater weight, and which are vastly more expensive to operate and maintain.

## The Carbureter

An automobile's carbureter is something like the human liver.

A car may have great potential merits, but with a sluggish carbureter they cannot develop into action, and you have a mighty sick car.

The wide-awakeness, the always-on-tap energy of Franklin cars is constantly insured by the most accurate, sensitive, positive carbureter ever put into an automobile.

We manufacture it ourselves; as carbureters purchased on the market, many of which give satisfaction on ordinary motors, are not efficient enough for FRANKLIN motors.

The Franklin carbureter is an automatic float-feed type. Gasoline enters from the lower side of carbureter and is strained through wire gauze before entering the float chamber. Dirt and water are collected in a trap, which can be entirely removed or easily cleaned, without disturbing any other part of carbureter.

A by-pass operated by the throttle acts positively when that is opened, and supplies auxiliary air in proper proportions. This by-pass, being mechanically operated, does away with springs, separate air-control and a multiplicity of other parts. All connections are made with ground joint unions.

The Franklin auxiliary exhaust, improved oiler, clutch, brakes and bearings, more convenient levers and better protection of parts, are some of the other details which make 1906 Franklins not only exceptionally powerful but the readiest and liveliest of motor cars.

**Type E:** Gentlemen's Roadster. The best-built, ablest Runabout in the world.

**Type G:** The new Light Touring Car.

**Type H:** The new 6-cylinder top-notch flyer.

Write for the book

We exhibit in New York at Madison Square Garden, January 13-20, 1906

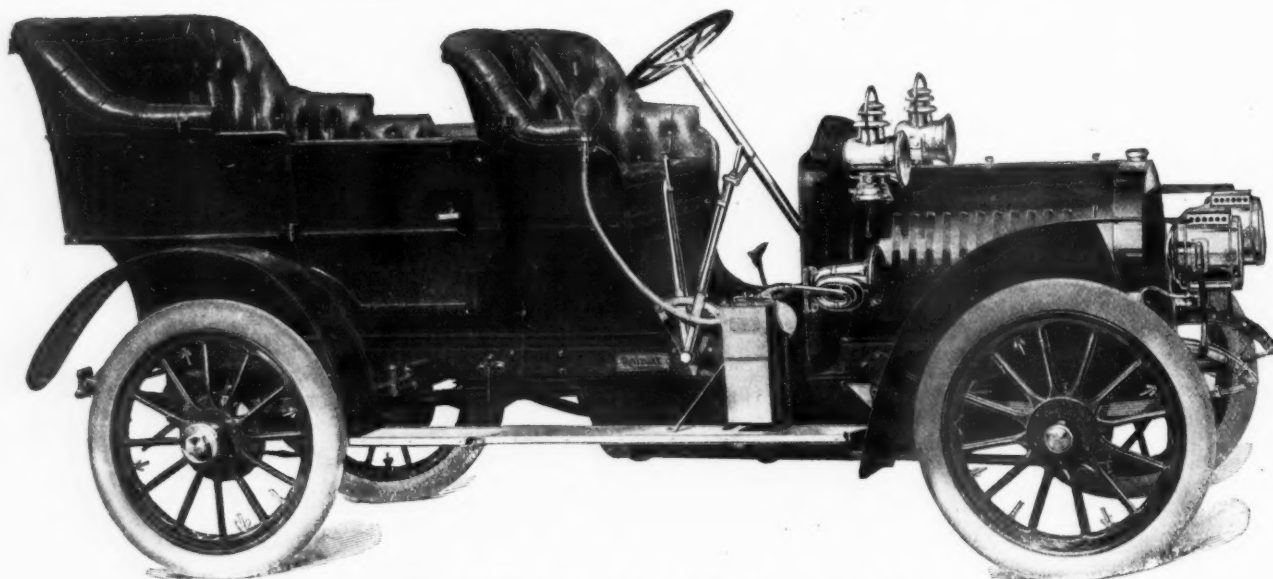
**H. H. FRANKLIN MFG. CO., Syracuse, N. Y.**

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# THE 1906 MODEL B Rainier

**"THE PULLMAN OF AUTOMOBILES"**

Absolutely the highest grade motor car built in this country, bar none, and the only car that can consistently compete with foreign machines. You will do yourself an injustice if you decide on your car without investigating this triumphant American production. New style make and break spark. Simms-Bosch Magneto, bevel gear drive. Very large and roomy, full aluminum bodies.



**MODEL B RAINIER, 30-35 H. P. PRICE, \$4,000.**

**Guaranteed free of repairs for one year**

Do you realize fully the great superiority of the "make and break" over the jump spark? Do you know that it does away entirely with the coil, the commutator, the batteries, and the spark plugs, and substitutes for all these a simple hammer and anvil, mechanically operated, which cannot get out of order?

Do you know that 90 per cent. of the foreign makers have already adopted this method?

Do you know that the RAINIER car is guaranteed not to cost one dollar for repairs within one year of purchase, unless you have an accident, and that it stands alone in this respect?

*Learn all about it in our new Bulletin just issued.*

**THE RAINIER COMPANY, Broadway, Cor. 50th Street, New York**

**BOSTON AGENTS: MORRISON-TYLER MOTOR COMPANY**

**Good Agents Wanted in Unassigned Territory**

If you are looking for the "best" car you can't recognize the car marks by size, speed, price, quietness, number of cylinders, where they are located, whether the car is gear driven or chain driven, or any such externals. As we said last week and as we want to repeat, the car that is "best" for you is that car which will return you the most fun and enjoyment per dollar expended, and which will fill your mind with the greatest number of pleasant recollections and the fewest unpleasant.

And as we said further, you can't determine which that car is by listening to what the makers and sellers of the various cars have to say in its favor at the beginning of the year, but what those who have purchased it have to say for it or against it at the end of the year.

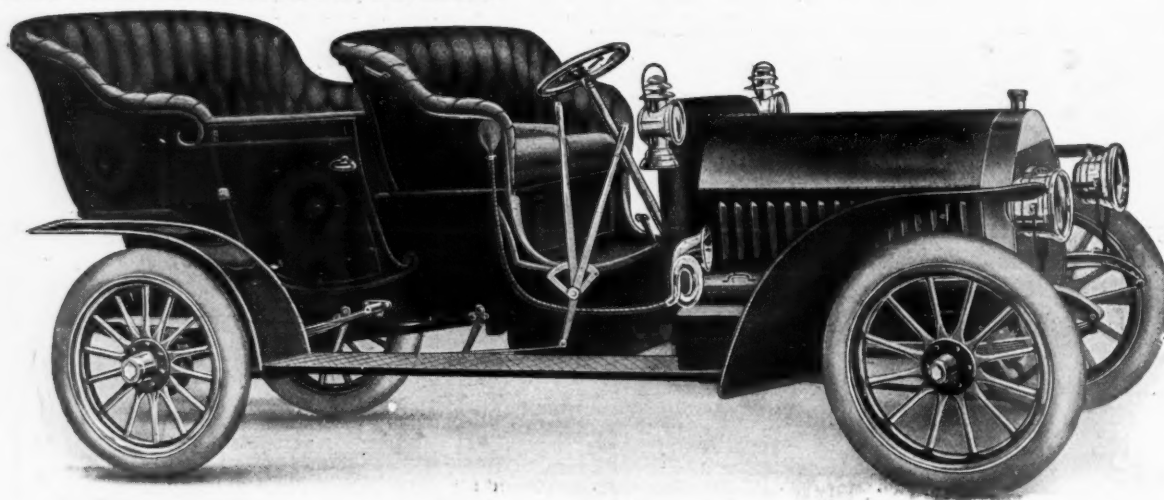
Better read this again and then look up our last week's ad if you have forgotten what we said in it.

J. STEVENS ARMS & TOOL CO.  
705 Main Street      Chicopee Falls, Mass.  
Members A. L. A. M.

# Wayne

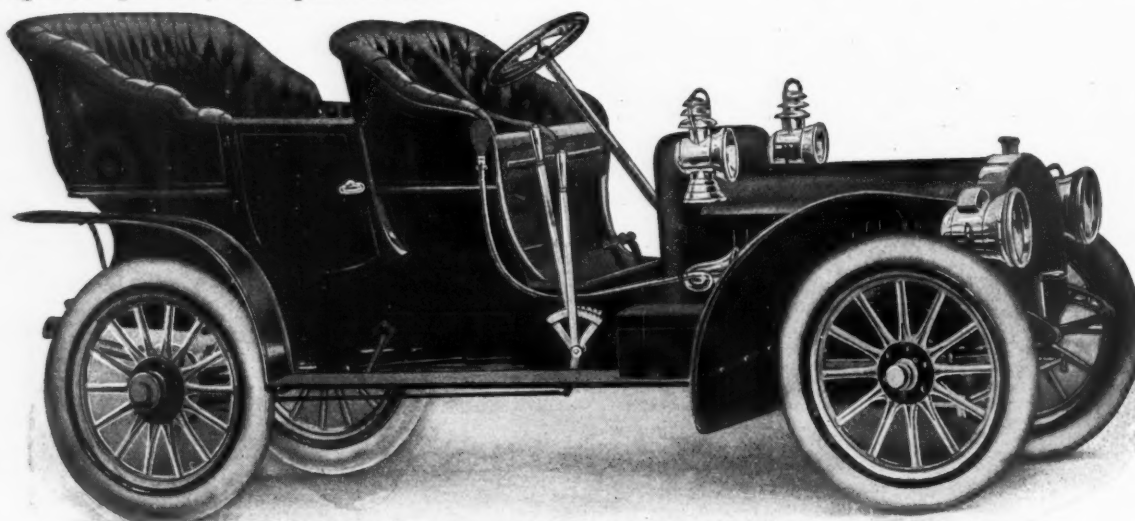
## An Introduction to the Wayne Cars of 1906

The appreciation accorded our cars last year warrants us in greatly increasing our capacity and in placing before the automobile trade improved types of Wayne cars. The four models we now present are the result of mature experience. They are not new and untried experiments. Each car is a distinct type of Wayne design and construction and each model has been built with a view to supplying the varied demand for high grade machines. In the Wayne cars of 1906 the automobilist will be sure to find a car suited to his needs.



**Wayne  
Model  
F  
\$3500**

MOTOR, 4 cylinder vertical, cylinders  $5\frac{1}{2} \times 5$  cast in pairs. Cylinders and pistons ground. Engine develops by brake test 50 H. P. Water Cooled. IGNITION, jump spark with quad coil and storage battery. TRANSMISSION, sliding gear with three speeds forward and reverse. Hess-Bright ball bearings throughout. REAR AXLE, shaft drive floating type. FRONT AXLE, 1 beam drop forged, one piece, nickel steel. WHEEL BASE, 114 inches. TIRES,  $34 \times 4\frac{1}{2}$ . EQUIPMENT, includes all necessary tools of the best quality, 2 side lamps, 2 acetylene head lights with generator, tail lamp and tube horn.



**Wayne  
Model  
K  
\$2500**

MOTOR, 4 cylinder vertical, cylinders  $4\frac{3}{4} \times 5$  cast in pairs and water cooled. Engine develops by brake test 35 H.P. Cylinders and pistons ground. IGNITION, same as Model F. TRANSMISSION and axles same type as Model F. TIRES,  $32 \times 4$ . EQUIPMENT, same as Model F.

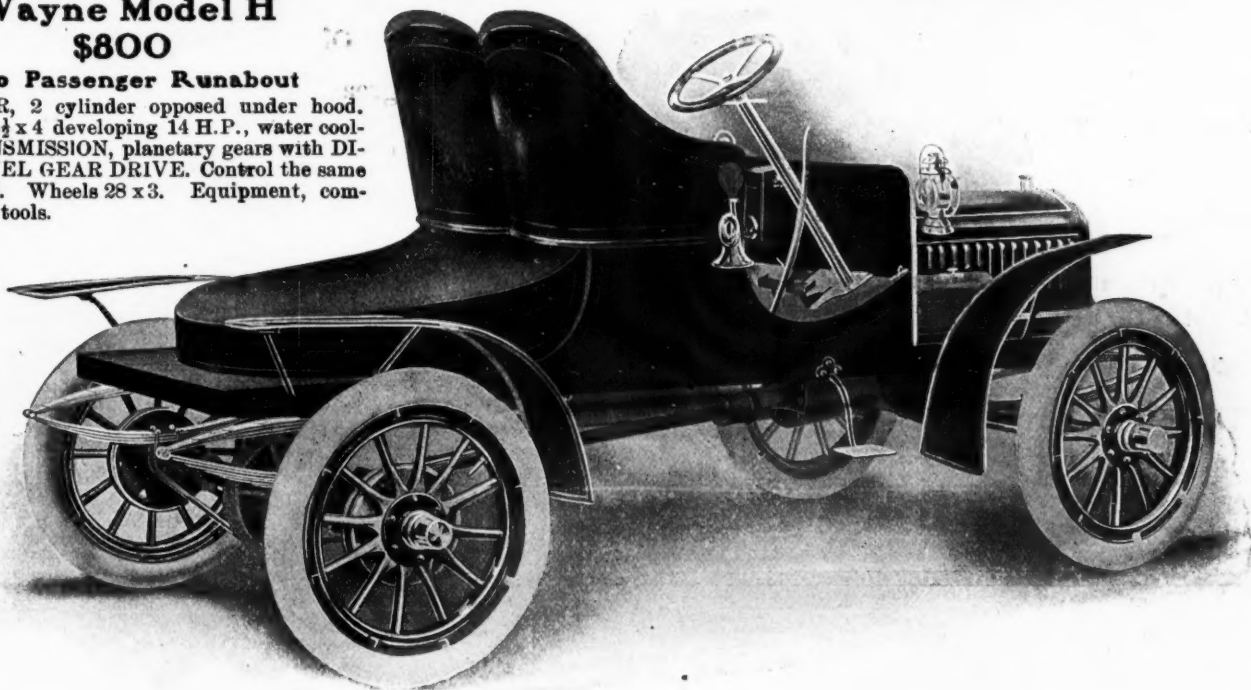
*When Writing to Advertisers, Please Mention Motor Age.*

# Wayne

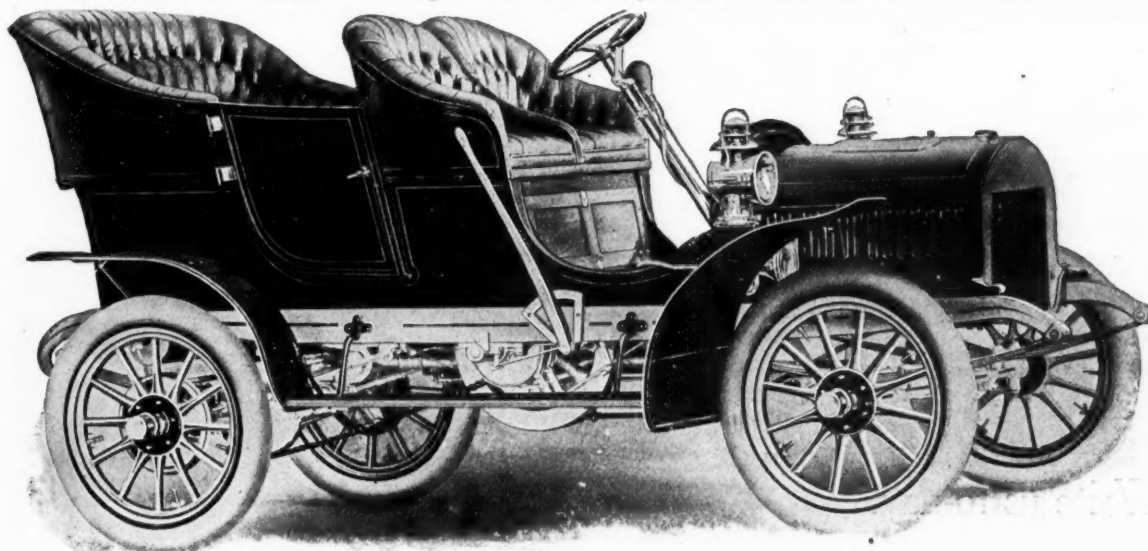
## Wayne Model H \$800

### Two Passenger Runabout

**MOTOR**, 2 cylinder opposed under hood. Cylinders  $4\frac{1}{2} \times 4$  developing 14 H.P., water cooled. **TRANSMISSION**, planetary gears with DIRECT BEVEL GEAR DRIVE. Control the same as Model C. Wheels 28 x 3. Equipment, complete set of tools.



*The strong features of this car are the extreme simplicity and accessibility of the engine and transmission. The crank case and transmission case form one casting and the entire engine can be taken apart or assembled in half an hour.*



## Wayne Model C \$1250

**MOTOR**, double opposed of the standard Wayne type, with cylinders  $5\frac{1}{4} \times 5$ . Engine is hung under the chassis frame and develops by brake test 20 H. P. This is the same type of car which Proved so successful last season, brought up to date and with all new improvements. **TRANSMISSION**, is of the planetary gear type with chain drive. **CONTROL** is by a single lever which engages the high speed clutch and reverse. The slow speed and brake are controlled by foot pedals. **TIRES** 30 x 3 $\frac{1}{2}$ . **EQUIPMENT**, complete set of tools, side oil lamps, tail lamp and horn.

We want agents to write us about the Wayne Cars for 1906. Agency arrangements can now be made for unoccupied territory. Write while you think about it for full particulars.

Members American Motor Car Manufacturers' Association, Chicago.

**Wayne Automobile Co., Detroit, Mich.**

When Writing to Advertisers, Please Mention Motor Age.

# MITCHELL

"The car  
you  
ought to  
have at  
the price  
you  
ought to  
pay"



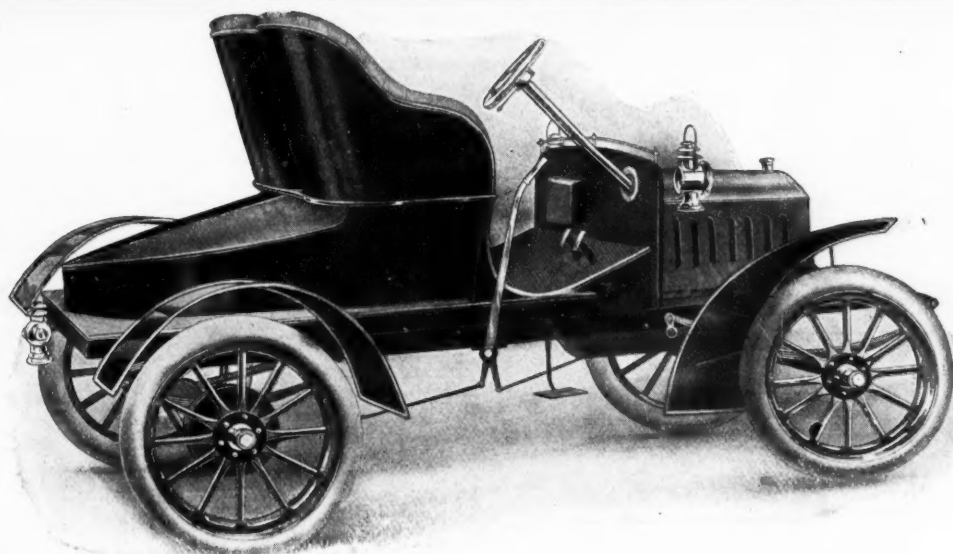
## ANNOUNCEMENT

- ¶ For 1906 the Mitchell line will consist of five models:
- ¶ Model 2B. Runabout. \$750.
- ¶ Model 4B. Touring Car. \$1,500.
- ¶ Also a Commercial Line, and
- ¶ Two other Cars for pleasure purposes, yet to be announced in detail.
- ¶ We are now making daily deliveries of 1906 Cars.
- ¶ Can close with a few more dealers only—not many—but a few—yes—if of the hustling type.
- ¶ Write us to-day.

MITCHELL MOTOR CAR COMPANY, RACINE, WIS.

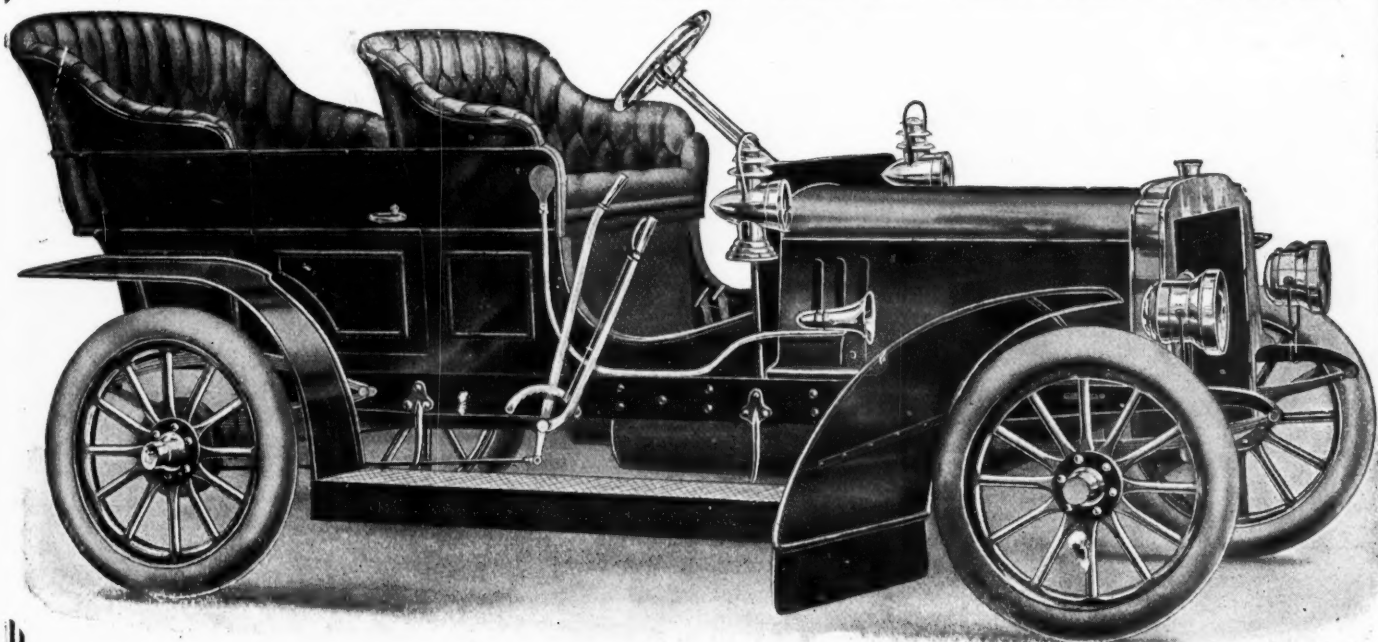
*Member American Motor Car Manufacturers' Association*

*When Writing to Advertisers, Please Mention Motor Age.*



### The Ford 4-cylinder Runabout

This car—Model N—is the biggest revelation yet made in automobile construction. A car of this type for less than \$500.00 seemed an impossibility, but here it is. 4 cylinders. 15 H. P. Direct drive. Speed 40 miles. 78-inch wheel base. Weight 700 pounds.



### Ford Model K

6 cylinders—40 H. P., 4 to 50 miles per hour on high gear. Perfected magneto ignition, mechanical oiler, 114-inch wheel base, luxurious body for 5 passengers, weight 2000 pounds. Price \$2500.

NO FURTHER PARTICULARS WILL BE GIVEN UNTIL THESE CARS ARE SHOWN FOR THE FIRST TIME AT THE AUTOMOBILE CLUB OF AMERICA'S SHOW AT THE 69th REGIMENT ARMORY, NEW YORK, JANUARY 13th to 20th.

## Deliveries for Models N and K Will Not Be Made Before March

1906 will be a "Ford Year." Agents who have closed with us can congratulate themselves.

# Ford Motor Company, Detroit,

Member American  
Motor Car Man's  
Association, Chicago

BRANCHES: 147-149-151-153 Columbus Ave., Boston; 1723 Broadway, New York; 727 Main St., Buffalo; Broad and Br'etonwood Sts., Philadelphia; 1413 Michigan Ave., Chicago; Cleveland and Kansas City. : : : : Canadian Trade Supplied by Ford Motor Co., of Canada, Ltd., Walkerville, Ont.

# SOLAR LAMPS

THEY CUT LIKE  
A KNIFE  
THROUGH THE  
GLOOM AND  
DARKNESS

LET THE  
SOLAR  
LIGHT  
YOUR WAY



EVERY  
MAN WHO  
DRIVES AT  
NIGHT  
MUST HAVE A  
GOOD CAR AND  
A BETTER  
LIGHT

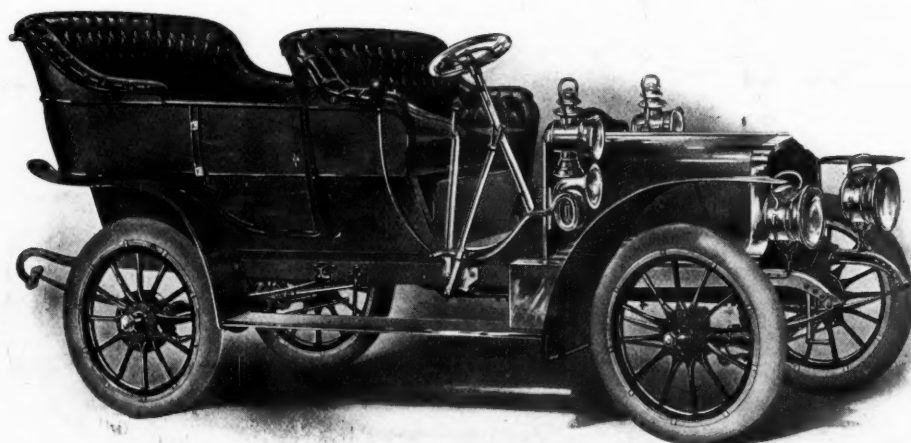
THAT'S THE SOLAR

GET OUR BOOKLET OR  
ASK YOUR SUPPLY MAN

**BADGER BRASS MFG. CO.**  
**KENOSHA, WIS.**

NEW YORK OFFICE, 11 WARREN ST.

# Corbin Cars for 1906



**Model E. Light Touring Car, 24 h. p. \$2,000.**

Four cylinder vertical, air cooled engine 24 H. P. mechanically operated valves. Jump spark ignition with synchronized system of distribution of the high tension current. Positive force feed lubrication. Sliding gear transmission, selective system having three speeds forward and reverse. Pressed steel frame and steel pan construction. Bevel gear drive rear axle of the floating type. Front axle I beam section, drop forged in one piece. New type worm and sector steering gear. Internal and external brakes on rear hubs. Body of graceful design, side entrance of the latest French type, roomy in proportions and luxurious in appointment. Wheel base 100 inches. Extra long springs, of special design and great flexibility. Wheels 32x3½ inches. Weight, 1800 pounds. Speed up to 45 miles per hour. Two gas lamps, generator, three oil lamps, horn and full complement of tools, constitute the equipment.

## Annular Ball Bearings Are Employed Throughout

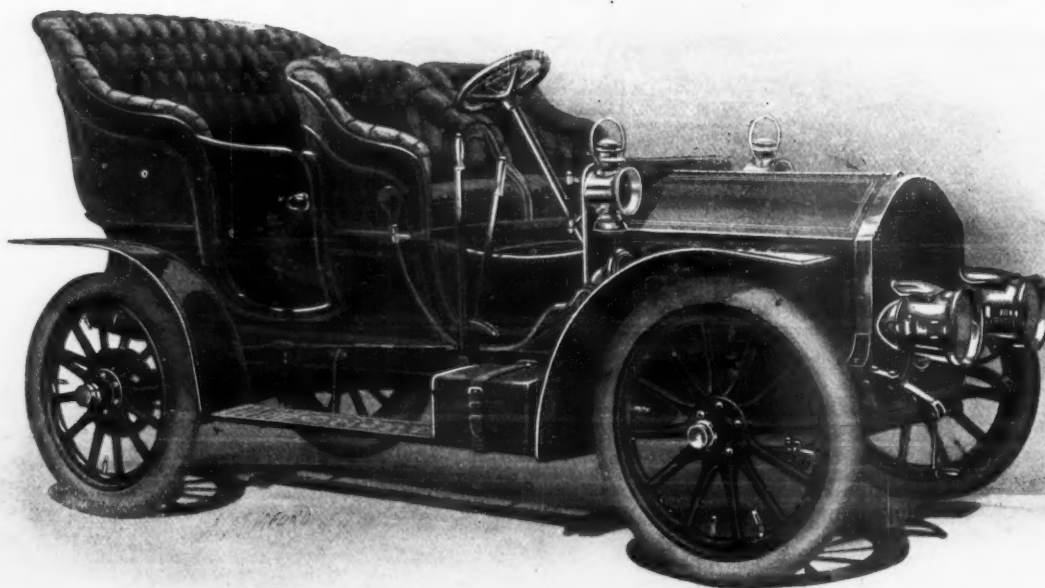
Certain agency opportunities are still open. Representative dealers are requested to communicate with us to insure early delivery of cars.

## Corbin Motor Vehicle Corporation

MAKERS OF CORBIN AIR COOLED MOTOR CARS : NEW BRITAIN, CONN.

4 West 38th St., New York. 43 Columbus Ave., Boston. 1406 Michigan Ave., Chicago. 115 East 7th St., Cincinnati  
5905 Centre Ave., East End, Pittsburgh. 470 Broad St., Newark

# WALTHAM-ORIENT



WALTHAM-ORIENT, MODEL R, \$2250

The Car of Today Must Do More Than Look Its Price. The high-priced, high-powered motor car is all right—it has its place and its purchasers, but the **popular demand** is for a car of moderate price, reasonable speed that will be maintained up-hill as well as on the level road; that will arrive on time and return when expected; that will keep on the road and out of the repair shop; that can be operated economically and safely and does not require the employment of a professional chauffeur; that will remain in service winter as well as summer.

It must look well—ride well—run well—and keep well. That's where your pleasure comes in. You pay your good money for it and you have a right to expect it.

It is because it combines all of these important and necessary features that

## The Waltham-Orient is the Leading American Car of Its Price

### Six Models for 1906

Model R, a Swell Special 20 h. p. - - - - -	\$2,250	Model M, 16 h. p. Runabout, Detachable Tonneau, \$1,750
Model N, 20 h. p. Tourist - - - - -	2,000	Model K, 16 h. p. Two-passenger Runabout, 1,600
Model L, 16 h. p. Tourist - - - - -	1,750	Model BB, 4 h. p. Friction Drive Buckboard, 400

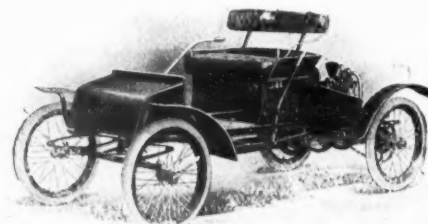
We are alive for live agents. Write for specifications and proposition.

We will exhibit at New York, Chicago and Boston Shows.

## WALTHAM MANUFACTURING COMPANY

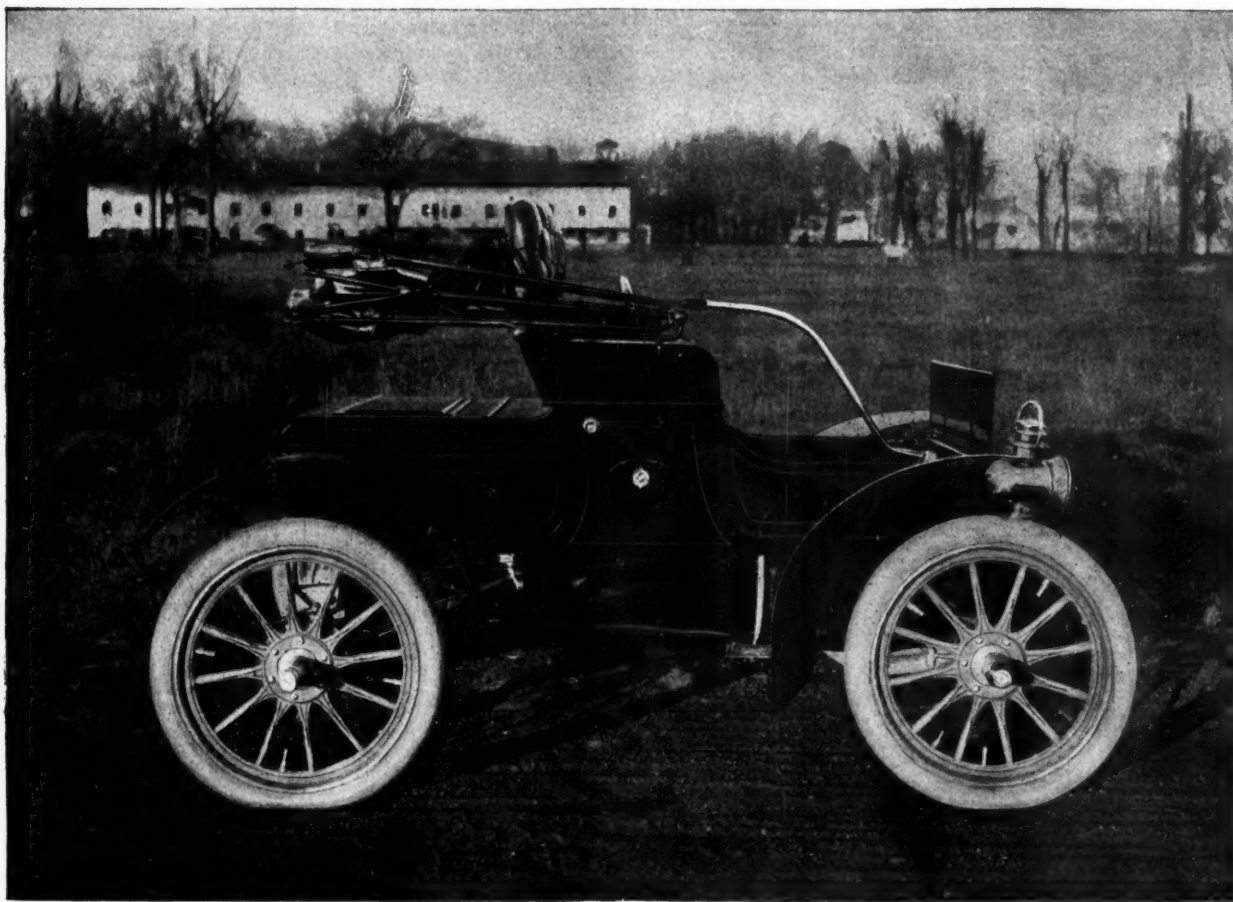
General Offices and Factory - Waltham, Mass., U. S. A.

Member Association Licensed Automobile Manufacturers.



MODEL B B—FRICTION DRIVE BUCKBOARD  
A REMARKABLE MOTOR CAR FOR \$400

# OLDSMOBILE



## Standard Runabout Model "B." Price \$650

For 1906 we have brought out, in addition to our well-known curved dash runabout (the "you see them wherever you go" kind), a straight dash or "piano box" runabout, which we sell at the same price. This style appeals strongly to a certain class of drivers. It is unique and attractive and possesses all the most desirable features essential to a satisfaction-giving runabout.

It has a simple single cylinder motor, with 7 h. p. It is lever controlled. Starts from the seat; has safety device to prevent all danger of back fire; effective and easily operated brakes, and many attractive and serviceable features, making it up-to-date and desirable in every way—a big value for the money, and essentially a car for business utility.

Use the Catalog Coupon below for further particulars regarding the Standard Runabout, Model "B," price \$650; the Palace Touring Car, four-cylinder, Model "S," price \$2,250; two-cycle Model "L," price \$1,250, or any of our commercial vehicles.

Our New Models will be on Exhibition at Madison Square Garden Automobile Show, January 13-20, 1906

**OLDS MOTOR WORKS, Member A. L. A. M. Lansing, Mich., U. S. A.**

CUT COUPON HERE  
CATALOGUE COUPON

**OLDS MOTOR WORKS**  
LANSING, MICH.

Kindly send me information regarding cars checked.  
I am interested.

Model B.... Delivery Cars....  
13 Model S.... Passenger  
Model L.... Traffic Cars....

Name \_\_\_\_\_  
Address \_\_\_\_\_

CUT COUPON HERE  
CALENDAR COUPON

**OLDS MOTOR WORKS**  
LANSING, MICH.

Enclosed find 10 cents, for which send your Art  
Calendar (free from advertising and suitable for fram-  
ing) for 1906. Design by George Gibbs. 13

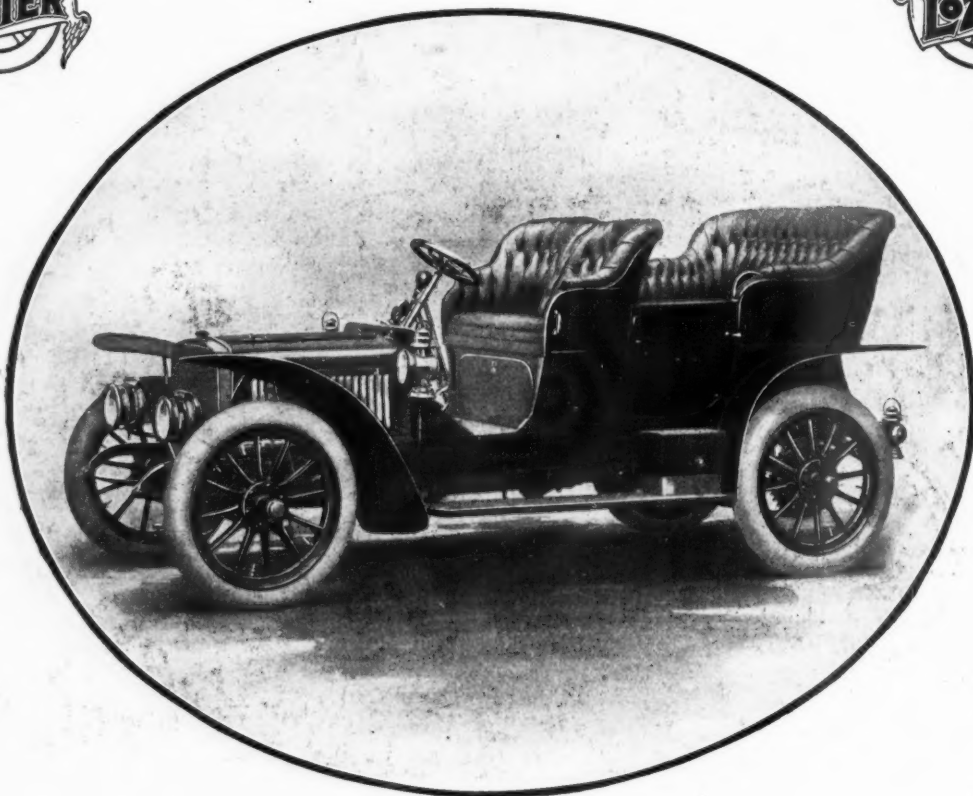
Name \_\_\_\_\_  
Address \_\_\_\_\_

CUT COUPON HERE  
MOTOR TALK COUPON

**OLDS MOTOR WORKS**  
LANSING, MICH.

Enclosed find 25 cents, for which have *MOTOR*  
*TALK*, a magazine devoted to automobiling, sent to  
me for 1 year. 13

Name \_\_\_\_\_  
Address \_\_\_\_\_



**W**E GATHER from the good opinions expressed by many highly pleased owners of **The Lozier Motor Car** that its "smooth running, ease of control and all-around reliability," covers about everything that is to be desired in a High-grade Motor Car. The item of low maintenance cost and all that it implies, was correctly calculated in its design, and is fully guaranteed in its perfect construction. Among the notably distinctive features that are embodied in

## The Lozier Motor Car

may be mentioned—the use of Hess-Bright ball bearings in sliding gear, change speed and differential gears. Weldless nickel-steel drop-forged I-Beam axles of heavy construction—FRONT AXLE AND STEERING KNUCKLE IN ONE PIECE. Ball-bearing wheels of large diameter (36 inches). Platform spring suspension. Solid forged motor crank-shaft (arms being webbed out instead of drop-forged)—turned, hardened and ground on its own centers. Transmission and differential shafts and flexible shaft with universal joint of nickel-steel. Babbitted bronze motor bearings. Long wheel-base, 115½ inches.

**1906 MODEL, TYPE C, 35 HORSEPOWER**  
Limousines, Landaulets and Touring Cars now delivering.  
Prices \$4,500 to \$5,500.

**The Lozier Motor Company**  
**1 BROADWAY, NEW YORK CITY**

[Cars now showing at R. M. Stivers' Carriage Rooms, 19 W. 62d St.]  
[After January 1st, at our New Building, 55th Street and Broadway]



# ELMORE

## ANNOUNCEMENT

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During the New York and Chicago Automobile Shows, 1905, we were approached by hundreds of automobile owners, saying, "If you people would only put out a four cylinder 2-cycle car, you would simply have the rest beat out of sight. It would be practically the same as an eight cylinder of the four cycle type with about one-fourth the complication, and as steady running as a clock." Well, we have built the four cylinder and it is all you expected, and more. You may have already heard this from persons who have seen and ridden in it, but you have never heard us say so. We, therefore, take this occasion to announce that it is our firm conviction that not only have we exceeded the most sanguine expectations of our friends, but that in all essential points we have the best four cylinder car ever built.

Our two cylinder 2-cycle car is a worthy successor to our Model 11, which, for reliability, as is well known, has never been excelled. It is in the details of construction that we have made our great advance and in changing from chain to shaft drive we accede to the popular demand for a two cylinder car of that type. Among the details we have improved is in using a new planetary gear running in oil, a popular make of circuit breaker, heads cast solid with cylinder, and on both cars we use the famous Hill Precision Oiler. But, as said above, there are so many things we want to talk to you about that we hope you will at once get into communication with us.

We have made so many improvements on our 1906 Models that we have not the space to speak of them here, but our literature will explain them all in such a manner that you will readily see we have a car with the exact features that have been talked of for years as being most desirable, but are impractical on any four cycle car on account of complication, rhythm of motion, power, etc., but which come perfectly natural to our 2-cycle. The action and power of an eight cylinder car with one-fourth the complication does it all.

Ask for literature.

**NOTE—Will exhibit in New York City at Madison Square Garden ONLY, Auto Show Jan. 13 to 20**

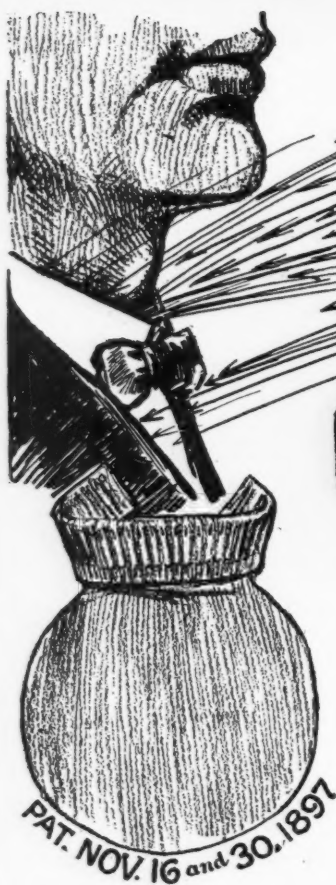
**Elmore Manufacturing Company**  
**Clyde, Ohio**

*Members of Association of Licensed Automobile Manufacturers*

# WAY'S MUFFLER

PAT. NOV. 16 and 30, 1897

WHICH WAY  
DO YOU WANT IT?



An ideal garment for men, women and children.

Most dealers carry Way's Muffler in stock.

If yours don't, write to us direct.

THIS IS THE WAY  
YOU WANT IT



**Either  
Protect  
Your  
Throat**

from draughts, discomfort, cold, illness and pneumonia with Way's Muffler—or stay indoors.

**WAY'S  
Muffler**

is a perfect throat and chest protector.

Comes with or without ear tabs as preferred.

Especially adaptable for winter motoring.

As easy to put on as your hat.

**The Way Muffler Co.**

MANUFACTURERS

Cor. 23d and Arch Streets **J. HOWARD WAY, Prop.**  
PHILADELPHIA, PA.

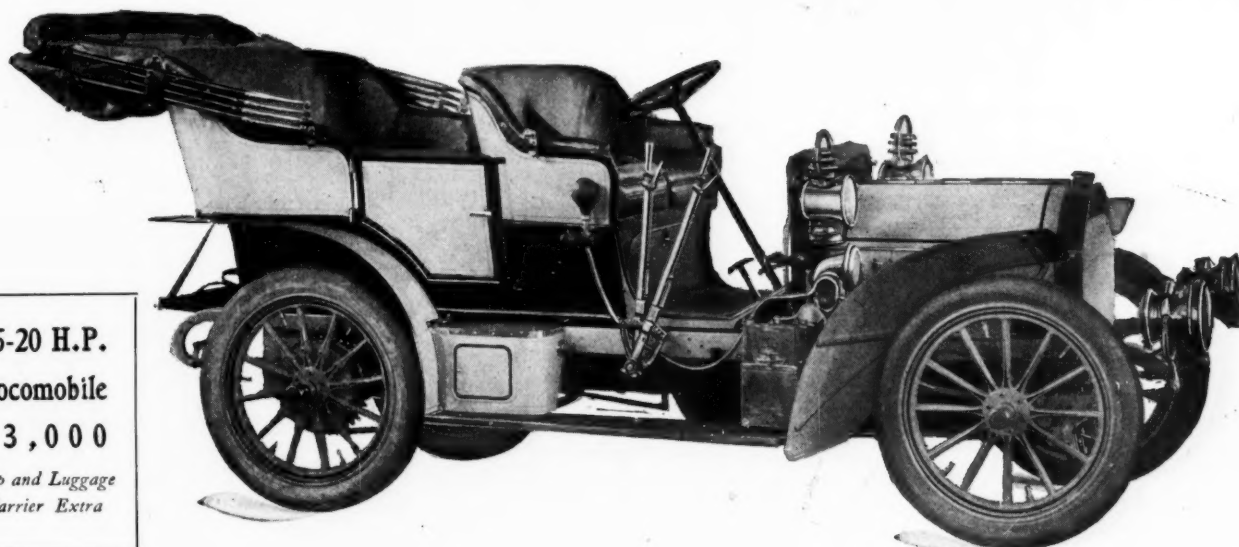
Chicago, 920 Medinah Temple New York, 43 Leonard St.  
Pittsburg, 9th and Liberty Sts. Cincinnati, 21 W. 3rd St.  
London, Canada, Hiscox Bldg.

MOTOR AGE

# Locomobile

"EASILY THE BEST BUILT CAR IN AMERICA"

15-20 H. P., \$3,000, 30-35 H. P., \$5,000, both with complete touring equipment



15-20 H.P.  
Locomobile  
\$3,000

Top and Luggage  
Carrier Extra

## TYPE "E" Locomobile 15-20 H. P.

PRICE—\$3,000 ready for touring.

EQUIPMENT—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.

BODY—Double side entrance, seating five; extra wide doors; fitted with top irons; color and striping optional.

MOTOR—Four cylinder, 3¾ inch bore, 4½ inch stroke.

CAM SHAFTS—Hardened forgings; all cams integral.

CRANK SHAFT—Machined from one solid forging.

LUBRICATOR—Large, mechanical lubricator.

CARBURETOR—Automatic, with balanced throttle valve.

GOVERNOR—Centrifugal type, prompt and positive in action.

IGNITION—Make-and-break, with iridium contacts.

MAGNETO—Low tension, our own design and manufacture.

ALUMINUM PAN—Placed underneath the machinery.

FRONT FENDERS—Have inner wings extending to bonnet.

CLUTCH—Cone type, with ample surface.

TRANSMISSION—Three forward speeds and reverse.

DRIVE—Double side chains.

DOUBLE UNIVERSAL JOINT—Between clutch and transmission.

RUNNING BRAKE—Large and powerful, metal to metal surfaces.

EMERGENCY BRAKES—Internal expansion type, metal to metal.

BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.

AXLES—"I" section hand welded axles.

RUNNING BOARDS—Rubber covered and brass bound.

TIRES—32x4 inches on all four wheels.

WHEEL BASE—93 inches.

CONTROL—Gas and spark levers on steering wheel.

## TYPE "H" Locomobile 30-35 H.P.

PRICE—\$5,000 ready for touring.

EQUIPMENT—Five brass lamps, horn, tire carrier, set of tools, extra parts, jack, lock box for tools and lubricants.

BODY—Double side entrance, seating five to seven; extra wide doors; fitted with top irons; color and striping optional.

MOTOR—Four cylinder, 4½ inch bore, 5½ inch stroke.

CAM SHAFTS—Hardened forgings; all cams integral.

CRANK SHAFT—Machined from one solid forging.

LUBRICATOR—Large, mechanical lubricator.

CARBURETOR—Automatic, with balanced throttle valve.

GOVERNOR—Centrifugal type, prompt and positive in action.

IGNITION—Make-and-break, with iridium contacts.

MAGNETO—Low tension, our own design and manufacture.

ALUMINUM PAN—Is placed underneath the machinery.

FRONT FENDERS—Have inner wings extending to bonnet.

CLUTCH—Cone type, with ample surface.

TRANSMISSION—Three forward speeds and reverse.

DRIVE—Double side chains.

DOUBLE UNIVERSAL JOINT—Between clutch and transmission.

RUNNING BRAKE—Large and powerful, metal to metal surfaces.

EMERGENCY BRAKES—Internal expansion type, metal to metal.

BRAKE AND SPROCKET DRUM—Bolted to each rear wheel spoke.

AXLES—"I" section hand welded axles.

RUNNING BOARDS—Rubber covered and brass bound.

TIRES—34x4½ inches.

WHEEL BASE—106 inches.

CONTROL—Spark and gas levers on steering wheel.

The Locomobile Company of America, Bridgeport, Conn.

NEW YORK, 76th St. and Broadway.  
PHILADELPHIA, 249 N. Broad St.

Member Association Licensed Automobile  
Manufacturers.

BOSTON, 15 Berkeley St.  
CHICAGO, 1354 Michigan Ave.

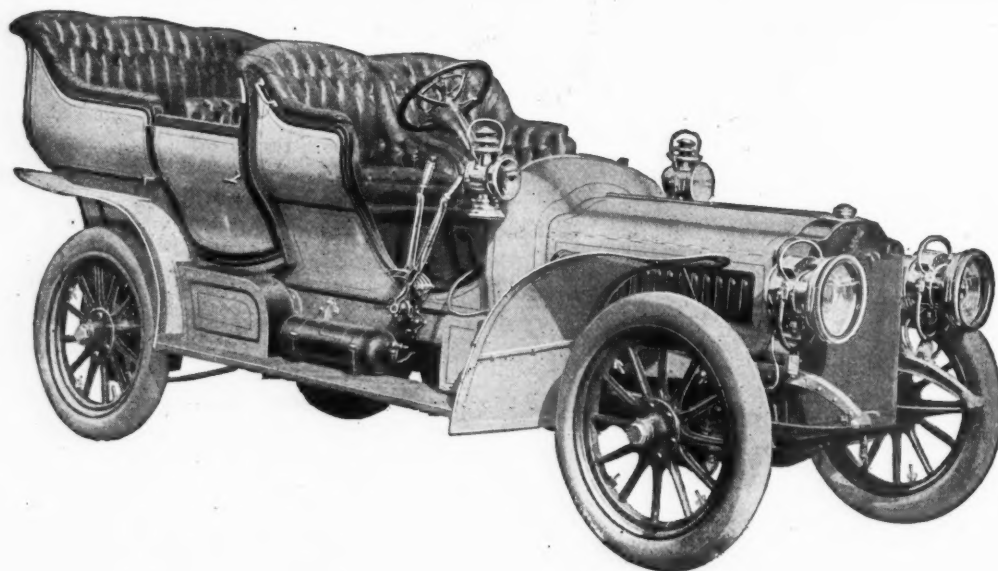
# You Must Take a Ride

in the

## 50 HORSE-POWER THOMAS FLYER

to fully understand and appreciate its powerful construction, perfect mechanical parts and excellent finish.

Price  
\$3500  
F. O. B.  
Buffalo



Members  
Association  
Licensed  
Automobile  
Manufacturers

As a result of three years of constant study, ambitious determination and hard work, we have in the new Thomas more fine bearings, more improved devices, proving power, safety, comfort and durability than any automobile made at home or abroad.

**"Every Stock Thomas Car guaranteed to show sixty miles  
an hour before leaving the factory."**

All we ask is an opportunity to show you and every man that we can prove the statement—

***"The Nearest Approach to Automobile Perfection"***

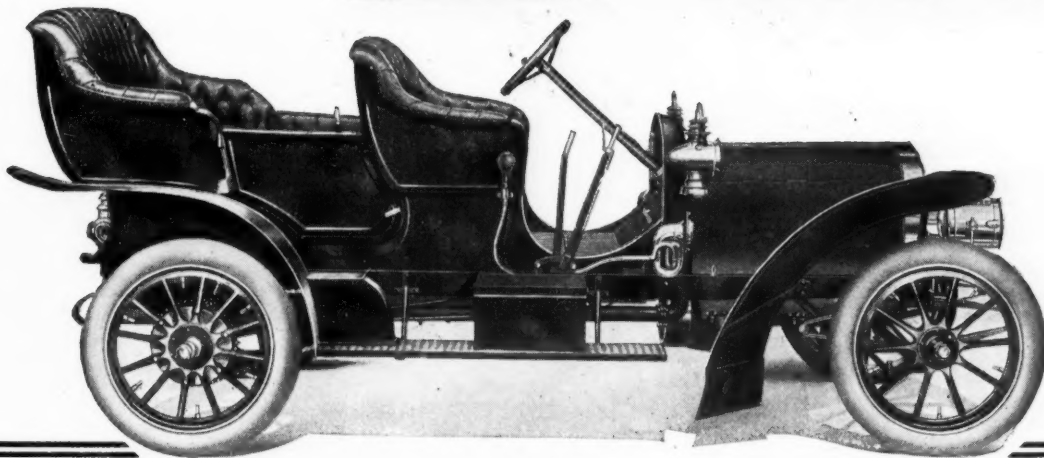
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## E. R. THOMAS MOTOR CO.

1417 Niagara St., BUFFALO, N. Y.

Largest Manufacturers of 50 Horse-Power Cars in the World

# THE MARION



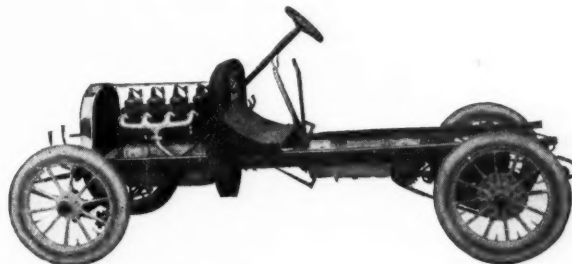
## The New "Model Five"

This car is not an experiment. A number of them have been in commission since August last. It successfully meets the demand for a Touring Car

That is high-powered;  
That is moderate in price;  
That is as fast as the speediest;  
That is roomy and luxurious (seats five);  
That is so simple as to enable a novice to take care of it;  
That is so strongly built as to cut out the repair bills;  
That is so easily handled a woman can drive it at high speed;  
That is so light and flexible as to make tire trouble a rare experience.

These problems have been intelligently and thoroughly worked out. Its four cylinders develop 28 horsepower and do it silently. The most efficient and noiseless chain drive yet devised delivers this power—all of it—directly to the spokes, without recourse to any roundabout transmission through rear axle or hubs. Total weight, 2,100 lbs. This combination of high power and light weight tells its story of speed and "get there" through any kind of country that has wagon tracks.

FEW AND  
SIMPLE  
PARTS



CLEAN  
COMPACT  
CHASSIS

Extreme simplicity marks every feature of the mechanism, while liberal dimensions, high-class material and accurate workmanship of every part that bears strain enable it to stand up to the roughest kind of work without damage. Multiple disc clutch and sliding gear transmission, with three speeds forward and reverse.

Two sets of powerful brakes, simple and sure steering apparatus and instantaneous responsiveness of the engines to speed regulation makes the control certain and easy.

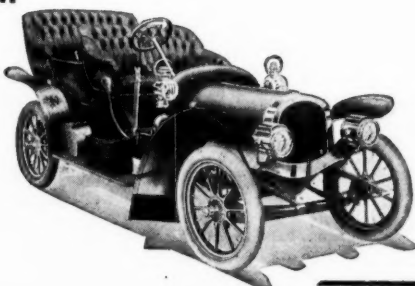
Automatic lubricating system that is efficient, reliable and economical.

Many excellent and exclusive features. Ask to be shown and we'll send our nearest agent with a car. Seeing and riding will convince.

FOUR CYLINDERS AIR COOLED	{ Model Five.....28 H. P. Touring Car .....	\$2,500
	{ Model Two.....16 H. P. Touring Car .....	\$1,500
	{ Model Four.....16 H. P. Physician's Runabout.....	\$1,250

Look us up at the New York and Chicago Shows.

We have a few attractive agency opportunities still open.



MARION CAR COMPANY INDIANAPOLIS INDIANA

# The Queen



**\$2000**

## One of Our Three New Models

**MOTOR**—4-Cylinder—26-28-H.P. **FRONT AXLE**—Solid-forged.

**DRIVE**—Shaft Bevel Gear.

**FRAME**—Pressed Steel.

**WHEELS**—32 x 4.

**WHEEL BASE**—101 inches.

**TRANSMISSION**—Sliding Gear.

**GROUND PARTS**—All Cylinders, Pistons, Piston Ring, Crank Shaft, Valves, Universal Coupling and Transmission Shafts.

**EQUIPMENT**—Five Lamps, Horn, Tools and Storage Battery.

We also have an 18-H.P., Two-cylinder Touring Car with Detachable Side door Tonneau, listing at \$1,100—and a Runabout 12-H.P. at \$800.

Write us for complete details and agency proposition.

**C. H. BLOMSTROM MOTOR CO., Detroit, Mich.**

New York Agents, Majestic Auto Co., Cor. 54th & Broadway

Chicago Agents, Branstetter Motor Co., 1337 Michigan Ave.

One of  
Mfg.  
Latest



Atwood  
Co.'s  
Models

Design Patent Applied For

**Very rich and exclusive.** The **highest grade** oil lamp ever produced by any manufacturer. In a class by itself, because there is no other oil lamp today that can anywhere approach it.

We were not satisfied with merely producing a lamp that would **burn**, also would **not smoke**, and that would **stay lighted**, that was **strong** and **finely finished**, important as these all are, it must have some **style** about it. A smart look! When you get an Atwood Lamp you get **all** of these requisites.

### M O R A L

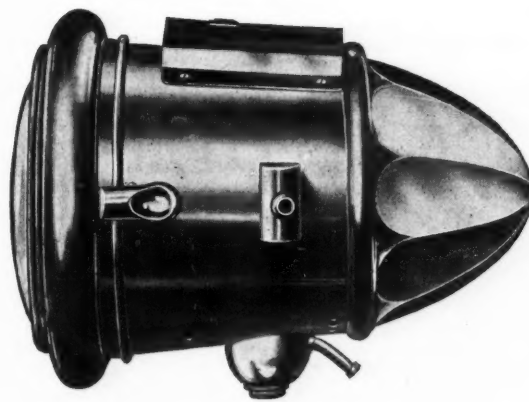
It is not necessary for a lamp to be unattractive and crude in order to be good.



New Parabolens Headlight

### Two Models of Gas Head Lights

Our new Lamp  
Factory is the  
largest and most  
complete in the  
United States.



No. 12. Gas Headlight

**ATWOOD MFG. CO., Amesbury, Massachusetts**

CHAFFIN, DODGE OFFICE FURNITURE CASE REGISTER TYPEWRITERS, ETC. BOSTON	E. P. BLAKE CO. 69-73 NUBBURY STREET BOSTON, MASS.	AUTOMOBILES BOUNTY SOLD EXCHANGED REPAIRED GARAGE 11 BAWDWIN STREET CHICAGO, ILL.
--	--	---

BOSTON, MASS. NOV. 6, 1905.

 Jackson Automobile Co.,  
 Jackson, Mich.

Gentlemen:—

We are sending you today under separate cover a photograph of a "Jackson" car that has been run this season over 10,000 miles by the odometer. We really believe it would pay you to get this into the Trade Journals if the expense is not too much. You wrote us sometime ago that you would have either the Model "C" or "D" made with detachable tonneau with fish-tail deck. Have you as yet decided which model you will have in this way? If so, kindly write us the price of machine without the tonneau. We believe it would be advisable to have the cheaper car with detachable tonneau.

Yours respectfully,  
 E. P. BLAKE COMPANY  
 Per *E. P. Blake*

Pic. EPB-B.

JEP.

P. S. The tires on this car are Diamond detachable. The two forward ones have never been touched and the two rear tires have been retraced once. This car is owned and driven by Mr. M. H. Bates, Brockton, Mass.

## OUR AGENTS ARE:

The Jackson Auto Co., Newark, N. J. Eastern distributors.  
 L. C. Howard, 1655 Broadway, N. Y.  
 Ormond Auto Co., Brooklyn, N. Y.  
 E. P. Blake Co., Boston, Mass. New England distributors.  
 East Liberty Auto Co., Pittsburg, Pa., 5969 Centre Ave.  
 Diamond Motor Car Co., 2121 Broad St., N., Philadelphia, Pa.  
 E. K. Hauser, 1233 New York Ave., Washington, D. C.  
 C. R. Dench, Erie, Pa.  
 Standard Auto Co., 730 Granite Bldg., Rochester, N. Y.  
 Paxson Motor Car Co., Cleveland, O.  
 Hagmann & Hammerly, Chicago, Ill.  
 Seidler-Miner Auto Co., Detroit, Mich.  
 The Jackson Auto Co., 3685 Olive St., St. Louis, Mo.  
 Chas. R. Johnson, Coldwater, Mich.  
 Chas. T. Blech, Springfield, Ill.  
 The Motor Car Co., Minneapolis, Minn.  
 Sioux Falls Auto & Supply Co., Sioux Falls, S. D.  
 The David Bradley Co. of Wisconsin, Fond du Lac, Wis.



# JACKSON AUTOMOBILE CO., :: Jackson, Mich.

**T**HE accompanying letter and picture explain **WHY** every agent we had on our list for 1905 has contracted for Jacksons for 1906; **Why** every "Jackson" driver is an advertisement; **Why** you, if you have the auto fever, should buy the Jackson; **Why** the Jackson has the world's record for five miles on a circular track for two-cylinder cars; **Why** the Jackson won second in the non-stop run from Chicago to St. Paul.

## THREE MODELS:

MODEL "C"	\$1250.00,	20-24 H. P.
MODEL "D"	\$1500.00,	20-24 H. P.
MODEL "G"	\$2500.00,	40-45 H. P.

# SCHRADER UNIVERSAL VALVE

Trade Mark Registered April 30, 1895

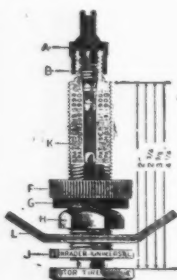
## SIMPLE AND ABSOLUTELY AIR TIGHT

Schrader Motor Tire Valves, as shown in cut, are the regular equipment for G & J Motor Tires; our No. 777 Valve being the standard for 2 1-2 inch and 3 inch tires, and our No. 725 Motor Valve being the standard for all tires larger than 3 inch.

SUPPLIED TO THE TRADE BY ALL TIRE MANUFACTURERS

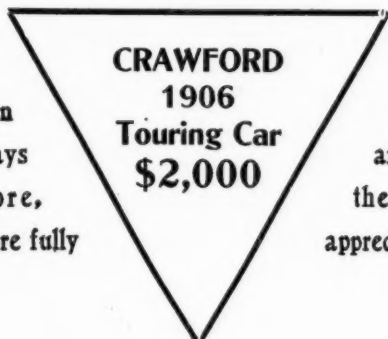
Manufactured by

A. SCHRADER'S SON, Inc., 28-30-32 Rose Street, New York



# It Isn't Always Winter

And when  
sunny days  
once more,  
more fully



the bright  
are with us  
then you can  
appreciate

## The Joys of Motoring

in a Five-Passenger

### CRAWFORD

#### OUR NEW MODEL IS OUT

Here are the Specifications:

**MOTOR:** Four-cylinder, upright, water-cooled,  $4\frac{1}{2}$  by  $4\frac{1}{2}$  individual cylinders. 24-28 Horsepower.

**CRANK SHAFT:** Four throw, bearing in five bronze bushings aggregating  $14\frac{1}{2}$  inches.

**CRANK CASE:** Removable without disturbing adjustments.

**WHEEL BASE:** 100 inches; tread 56 inches.

**WHEELS:** 34-inch, wood, artillery type, on large ball bearings.

**TIRES:** Optional; regular clincher or mechanically attached.

**DRIVE:** Double chain on generous-sized sprockets.

**TRANSMISSION:** Selective sliding gear set, three forward speeds, one lever control, ball bearings.

**BEARINGS:** Ball bearings throughout.

**BRAKES:** Two powerful brakes on rear hub, with set lever. Two band brakes operated by foot on cross shafts.

**LUBRICATION:** Force feed lubricator.

**FRAME:** Deep section pressed steel sides, with an angle iron sub frame brazed up to carry motor and transmission, which are connected by double universal joint.

**CLUTCH:** Of inverted type, made dust-proof by leather diaphragm and operated by foot lever.

**IGNITION:** Jump spark, with four coils on dash.

**CONTROL:** Throttle and spark.

**SPEED:** 36 miles, approximate maximum.

**WEIGHT:** 2100 lbs.  
**TANK CAPACITY:** 14 gallons.

**STEERING GEAR:** Wheel and pinion.

**AXLES:** Large sized tubing.

SEE US  
at the  
A. C. A. SHOW  
in 69th Reg. Armory  
NEW YORK

**Crawford Automobile Co.**  
HAGERSTOWN, MD.

# CADILLAC UTILITY

The single-cylinder Cadillac  
will climb any hill that any  
automobile will climb.

The single-cylinder Cadillac  
will travel as fast as anybody  
ought to ride.

The single-cylinder Cadillac  
will travel any road that any  
automobile will travel.

The single-cylinder Cadillac  
Costs less to operate  
Costs less to maintain  
Requires less attention  
than any automobile we know of.

Because so many people know  
these, and some other things, prob-  
ably accounts for the fact that  
more Cadillacs were sold during  
1905 than any two other makes  
combined and won for them the  
unquestioned distinction of

## America's Leading Motor Cars

WE WILL EXHIBIT IN NEW  
YORK AT MADISON SQUARE  
GARDEN ONLY, JAN. 13-20, 1906

**CADILLAC MOTOR CAR COMPANY**  
DETROIT, MICHIGAN

Member Association Licensed Automobile Manufacturers.

# Haynes

**Exclusive Features that Appeal  
to Discriminating Buyers**

## Model "R" Four-Cylinder Touring Car

Roller bearing vertical engines. Cylinders 5 1/8"x8"; 50 H. P. Cast separately. Sliding gear transmission with exclusive device which prevents possibility of burring or stripping gears and permits instant change from high to lower speeds with perfect safety and without noise. Positive cooling system operated at very low cost of power. Individual and special lubrication. Carburetor which assures perfect mixture in all temperatures and under all climatic conditions. Master clutch that has no leather surfaces to wear. Takes hold easily and gradually without jerking. Shaft drive. Exclusive universal joints that do away with wear on pins run in housing packed with grease. One piece nickel steel rear axle with beveled sprocket gear driven by roller pinion; thrust eliminated; friction reduced; noiseless; all in a bath of oil. Roller bearings throughout. 108 inch wheel base. 50 inch tonneau with ample room for two folding chairs. Six to 60 miles an hour on high gear. Weight, 2,750 pounds. Price, \$3,500, f. o. b. Kokomo. Full head and tail light equipment. Horn and tools.

Every important feature of the 1906—HAYNES—roller bearing engines, master clutch, transmission, universal joints, rear axle, sprocket and roller pinion is exclusive with and found only on the HAYNES. Every detail has been developed in the HAYNES factory and with exact reference to every other part. There is perfect harmony throughout the entire mechanism. This is the reason that in the HAYNES car there is less than 10 per cent loss of power between the engine and rear tires. It is the reason that its cost of maintenance, upkeep and operation is so remarkably low, and that for 14 years it has had the acknowledged reputation of being a car of preëminently high quality.

Its cylinders are extra large. They hold compression perfectly and give high power. When changing gears the transmission device never allows the momentum of the fast moving car to be thrown against the power of the engine, with its consequent strain to the entire mechanism, frame and tires, a fault common to all other types of transmission. No danger of stripping gears or of gearing climbing out of casing, which constitutes the chief objection offered to large shaft driven cars.

Roller bearings give noiseless operation. Large flexible springs insure riding ease and long life to tires. Simplicity of control, all parts immediately accessible. Honestly built. Body of cast aluminum and wood. Gray curled hair and hand-buffed leather upholstery. All materials—metal or wood—are tested for strength and flexibility at double severest road requirements.

These are SOME reasons why the HAYNES gives such satisfactory service at a low rate of cost for upkeep. Others are given in our catalogue Number 12, sent prepaid upon request.

**"The Car that the Repairman Seldom Sees"**

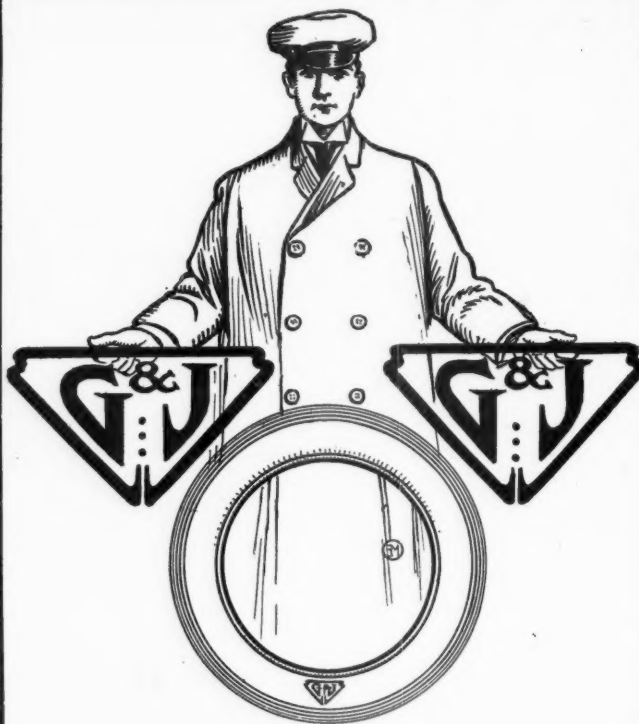
**The Haynes Automobile Co.**

**KOKOMO, INDIANA**

CHICAGO: 1421 Michigan Ave.

NEW YORK: 1715 Broadway

Members A. L. A. M.



# G & J TIRES

For the

## SEASON OF 1906

**OPEN STEAM CURED  
STRONG AND TOUGH  
MOST DURABLE—  
HIGHLY RESILIENT**

The Best Tire Made For  
Automobile Use

Write us

# G & J TIRE CO.

**INDIANAPOLIS**

Boston

Chicago

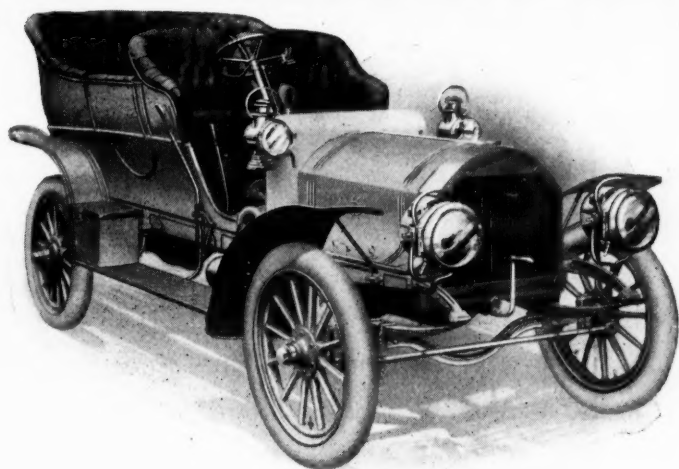
Buffalo

Denver

Cleveland

San Francisco

Detroit



Again—"As good as it looks"

## THE PARLOR CAR OF MOTOR CARS

# Stoddard-Dayton

Talk of luxury! The roomiest of seats—splendid cushions that take you into their generous depths and make you forget there was ever an angle to ache mortal spine.

Well, that is the kind of rich comfort you find in the STODDARD-DAYTON Touring Car.

But there's more than fine upholstery to contribute to your ease.

The STODDARD-DAYTON has every practical modern device that takes up jar and reduces vibration. The springs are single elliptic—40-inch front, 50-inch rear, made from best crucible analysis steel. There are roller bearings throughout. Mechanical lubrication keeps all working parts swimming.

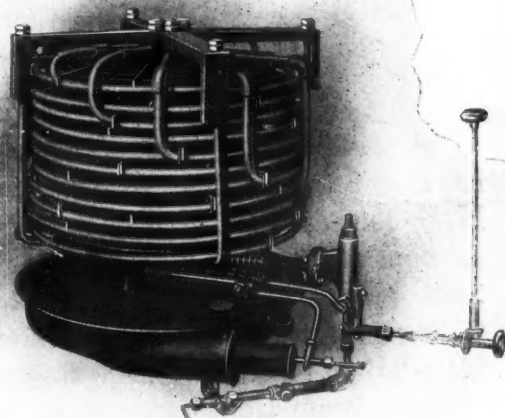
The STODDARD-DAYTON Model-D—5-passenger Touring Car has a special type of  $4\frac{1}{2} \times 5$ -in. 4 cylinder motor; water-cooled; frame of hot-rolled, high carbon, pressed steel, sliding gear transmission, three speeds and reverse—selective type, speeds can be changed instantly without clashing or friction; practically noiseless; entire transmission on roller bearings; mechanical lubrication; 30 to 35 horsepower. Proportion of power to weight, one horsepower to every sixty pounds. \$2250. Immediate delivery.

Write for our 1905-book. Interesting to any one who owns a car or intends to own one.

## THE DAYTON MOTOR CAR CO. Dayton Ohio

Agencies in the following cities: McDuffee Automobile Co., 1449 Michigan Ave., Chicago; Stoddard-Dayton Agency, 1853 Broadway, New York; Hamilton Automobile Co., 206 North Broad, Philadelphia; Central Automobile Co., 5989 Centre Ave., Pittsburg; J. A. Cramer, 737 Main St., Buffalo; Randliff Motor Car Co., 24 Columbus Ave., Boston; Colonial Automobile Co., 3944 Olive St., St. Louis; De-right Automobile Co., Omaha; H. S. Moore, 160 Crawford Road, Cleveland; Automobile & Supply Co., 24 Temperance Street, Toronto; Norman W. Church, Hellman Bldg., Los Angeles, Cal.; Haynes Automobile Co., 220 South 6th Street, Minneapolis; C. M. Wood, Denver; Fisher Automobile Co., 330 North Illinois Street, Indianapolis.

## The Incomparable WHITE The Car for Service



WHITE GENERATOR

Above is illustrated the generator of the White steam car, together with burner, vaporizer, pilot-light and gasolene connections. A glance is sufficient to show that the White generator is totally unlike any other boiler ever designed. We might point out how wide this difference is by calling attention to the fact that in the White generator the water is at the top and the steam at the bottom. In every other type of steam-making apparatus, water is at the bottom and steam at the top.

If the coils of the White generator should be unwound and straightened out the generator would be seen to consist of a single long piece of steel piping. Could anything simpler than this be conceived? The capacity of the tubes is comparatively small; i. e., the amount of water and steam contained therein at any one time is small. The tubes will safely withstand a pressure of many times that which it is possible for the steam to attain. Could any safer arrangement be imagined?

As regards the superior reliability of the White system, that is a matter which has been amply demonstrated by the continuous victories and notable achievements of six successive models of "The Car for Service."

**WHITE SEWING MACHINE COMPANY**  
Cleveland, O.

*Premier*

## "The Quality Car"

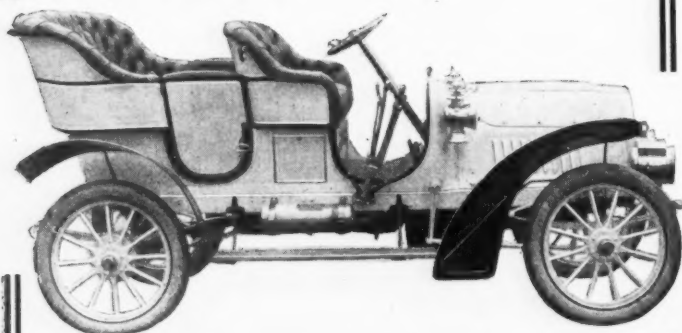
(Air-Cooled)

### Conspicuous in Automobile Construction

by virtue of its beautiful design, great power, speed, ease of carriage, simplicity of manipulation and accessibility. It embraces a 20-24 H. P. four-cylinder vertical motor,  $4\frac{1}{4} \times 4\frac{1}{4}$  in. bore and stroke, bevel gear shaft, drive, three speeds forward and reverse, Premier sliding gear transmission (mounted on five Hess-Bright type ball bearings), pressed steel frame, I beam front axle, 32 in. wheels, 4 in. Clincher tires, 106 in. wheel base, beautiful cast aluminum curved dash, sight feed precision oiler, cast aluminum hood front and fan, luxurious upholstering, rear seat 40 in. (measure the other cars), irreversible steering gear. Full gas and oil lamp equipment and generator, horn, and *brakes that hold*—altogether comprising a car which has no superior in point of merit and luxury. Price, \$2,000.00 f. o. b. Indianapolis.

Model L De Luxe, \$2,250.00.

Write for catalogue and booklet (P) of Road Experiences.



**Premier Motor Mfg. Co.**  
INDIANAPOLIS, IND.

Members American Motor Car Manufacturers' Association

## An Investigation of Goodrich Tires

Mr. E. Shirts, cashier of the Citizens' State Bank, Noblesville, Ind., after using a set of Goodrich Tires through the year of 1904 and all of 1905 up to date, without a repair of any kind, decided to take off the tires for examination just to satisfy his curiosity. **All he found was Goodrich Rubber and Goodrich Fabric perfectly united and looking just as good as new.** His letter:

"In the spring of 1904 I purchased a Cadillac automobile, Model B, equipped with **Goodrich Tires, 3x30 inches**. I used those tires all the season of 1904 and all of this season without a repair of any kind, not a single puncture, and the tires look as good as new, with the exception that the treads are flattened down some. I have had such remarkable success with them that a few weeks ago I took the front ones off to see what they were made of, and found them in perfect condition, not even rim-rusted.

"I have driven my car every day that was fit to be out with my family and have kept them busy both seasons and my experience with them has been one round of pleasure."

**THE BAILEY "WON'T SLIP" TIRE.**  
Regular Goodrich construction, but provided with the Bailey "Won't Slip" Tread. Prevents slipping, skewing or skidding. :: ::

**The B. F. Goodrich Co.**

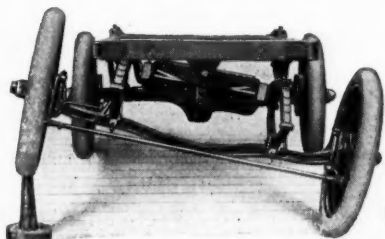
AKRON, OHIO

New York, 66-68 Reade St. and 1625 Broadway	
Buffalo, 731 Main St.	Cleveland, 416 Erie St.
San Francisco, 392 Mission St.	Chicago, 141 Lake St.
Boston, 161 Columbus Ave.	Detroit, 80 E. Congress St.
Philadelphia, 909 Arch St.	Denver, 1444 Curtis St.
London, E. C., 7 Snow Hill.	

# THE MARMON

"A Mechanical Masterpiece"

Front  
Wheel  
Raised  
Over  
A Foot



Body  
Level

## Rough Road Reasons

The purpose of this picture is not to show that the Marmon can be photographed on a rough road, but to show why the Marmon can be run at good speed over rough roads without incurring the ruinous strain on the mechanism and the vicious jolting to the passengers which is inevitable in any other car.

In all other automobiles the power plant is attached to the body frame and the body frame is suspended at four points on the axles. Except for the springs and tires, this construction would enjoy no advantage over that of a log wagon. But in an automobile, weight must be considered, and its costly mechanism must be protected. This unnatural and unyielding construction means ruinous binding and twisting strains in some part of the mechanism all the time. The rougher the road, the worse the strain.

The elasticity of the Marmon is such that no matter how rough the road, the mechanism is free from such strains and its passengers enjoy the very luxury of motion.

This elasticity is supplemented by springs, but is primarily due to an exclusive patented Marmon feature

## Double Three-Point Suspension

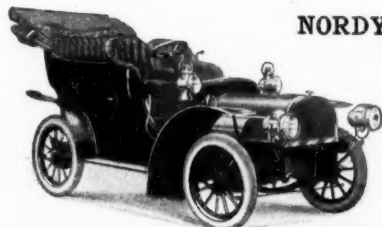
Cast aluminum body on one frame, power plant on another frame, each frame suspended on three pivotal points. No matter how these frames are tilted, the power plant, straight and rigid driving shaft and rear axle are maintained in alignment. This means perfect power transmission, means fewer parts, simpler parts and less wear on all parts, tires included.

The Marmon oiling system gives no trouble, has no uncertainties. Starting and stopping with the engine, a constant and uniform flow of oil is forced through the hollow crank shaft directly into all the main engine bearings, crank and piston pin bearings. Has no adjustments. All parts oil-tight and dust-proof. One gallon of oil runs the Marmon from 600 to 1,000 miles.

These and other superior features are fully described in Booklet No. 1. Yours for the asking.

We shall demonstrate at the Armory Show, New York.

Four Cylinders { Model C, Four Passenger, \$2,500  
Air Cooled { Model D, Five Passenger, 3,000

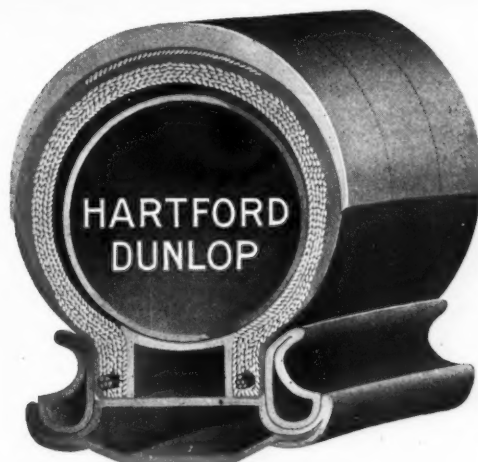


**NORDYKE & MARMON CO.**

Established 1851

Indianapolis, Ind.

Members  
American Motor Car  
Manufacturers'  
Association



## 1906 Announcement 1906

The 1906

**Hartford Dunlop**

and

**Hartford Glincher Tires**

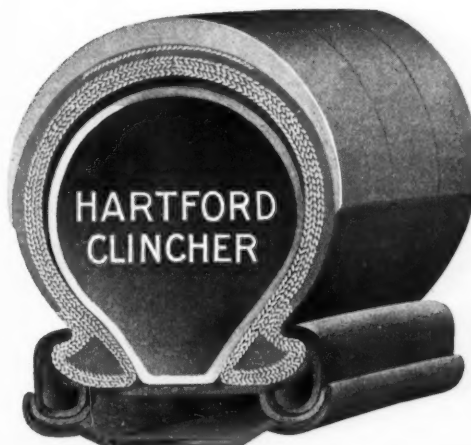
will be of entirely new construction. Both types will fit our

**Hartford Universal Rim**

upon which can be placed all makes of Standard Clincher Tires.

**The Hartford  
Rubber Works Company**

Hartford ... Conn.



# Scratch Your Head

for a moment

"The total light falling on a reflector from square of the maximum angle subtend-

Fig. 1 is a section of the focal length AB is one-half Note the width of the angle

Fig. 2 is a good specimen you will find in lamps made It is flatter, because that length ab is correspond-

It is better than a because it stays bright—but with the Rushmore angle

The Rushmore lens would fall on the circle XY

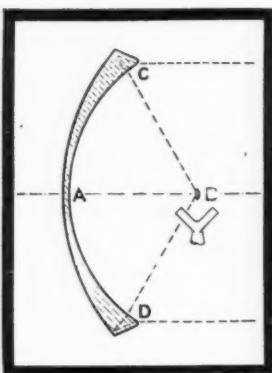
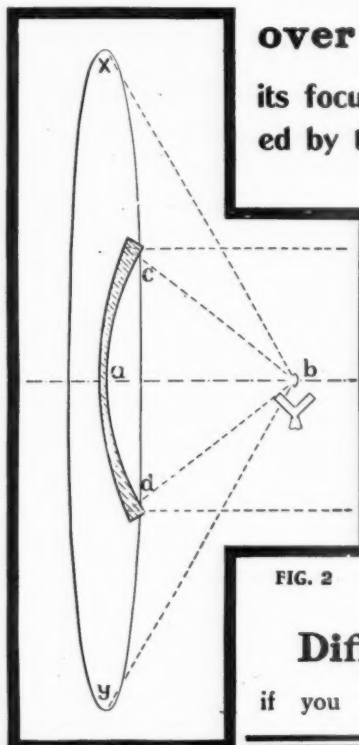


FIG. 1

**Whew! What a**

How much more light would you be getting



over this:

its focus is proportional to the ed by the rays."

Rushmore lens mirror, whose its effective face diameter. CBD—about 120 degrees.

of "mirror lens" such as to imitate the Rushmore. costs less, and its focal ingly greater.

plated reflector, certainly, compare the angle cbd xby.

mirror gets all the light that at the distance ab.

FIG. 2

**Difference!**

if you had Rushmore lamps?

**RUSHMORE DYNAMO WORKS**

**.. Plainfield, N. J.**



**American Mercedes**

**IF YOU WANT A MERCEDES**

**Buy it Here and Save the Duty**

All the speed, all the strength, all the lightness and all the beauty of the imported 1906 Mercedes are repeated in the 1906 American Mercedes. Every working part in the one has its counterpart in the other. No test of endurance that can be applied to these two cars will bring out a difference between them. Every patent, every device, every method of construction used by the Daimler Motoren Gesellschaft in building the Mercedes is used by us in building the American Mercedes.

We have the sole ownership for the United States and Canada of all patents, designs and shop drawings of our parent company.

Through the rights granted us by our parent Company, the Daimler Motoren Gesellschaft, we have during the past year convinced the most prejudiced and skeptical buyers of foreign automobiles that the American Mercedes is the equal in every respect of its counterpart, the imported Mercedes.

There is only one difference — you save the duty.

The 1906 American Mercedes will be exhibited at the Automobile Show.

**DAIMLER MANUFACTURING CO.,**

N. Y. City Garage, 10 West 60th St.

973 Steinway Ave., LONG ISLAND CITY, N. Y.

# Did You Ever

try to force your gas generator a bit, only to see the lamps grow dim and dimmer, and still more dim, till you could have run into a stone wall before you saw it? And did you find, when you got through, a savory mess of baked yellow lime in the carbide cup, that had to be dug out with a chisel and language that wouldn't look well in print? And were your burner tips clogged with tar that defied your ingenuity to get rid of it?

Not once, but dozens of times, probably!

All part of the game, you say?

## Not if you had a Rushmore Generator!

It is *the one* portable generator that can be forced *ad lib.* without overheating and without making tar instead of gas.

It is *the one* portable generator whose mode of action will bear scientific discussion.

We want to tell you more about it. Write us.

## Rushmore Dynamo Works

Plainfield, N. J.

## PENNSYLVANIA CLINCHER

"No car is faster  
than its tires."



"Tire troubles  
place a fast car in a  
class with the farm  
wagon."

## PENNSYLVANIA RUBBER CO. JEANNETTE, PA.

## The Automobile WASHSTAND-TURNTABLE

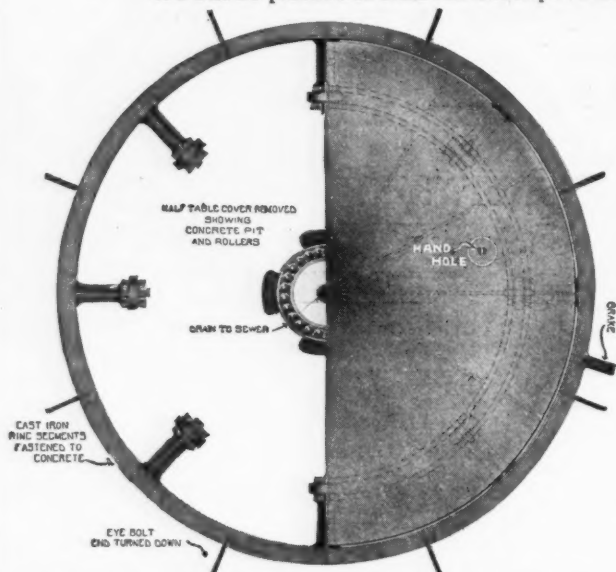
It greatly increases the capacity of a garage by saving the space otherwise required for maneuvering cars. It also permits a car to always face the door, thereby avoiding the inconvenience and danger of accident incident to backing it, when the approach is difficult.

The table is of cast-iron supported by a ball-bearing pedestal in center and rollers near its outer edge. It rests in a concrete pit about 12 inches deep, the edges of which are protected by an iron ring or curb as shown. It moves easily, is practically indestructible and is absolutely fire-proof.

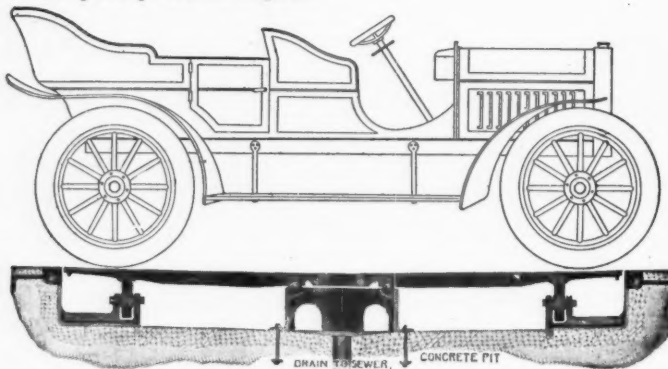
It greatly facilitates the washing of cars, all water from surface of table and garage floor passing to sewer through a drain pipe in center of pit.

We make Washstand-Turntables and also plain turntables (without the washstand feature) for wheel bases up to 126 inches.

We will be pleased to send full descriptive matter and quote prices on request.



Sectional views of WASHSTAND-TURNTABLE. Patent applied for.



**LINK-BELT  
Machinery Co.**  
CHICAGO

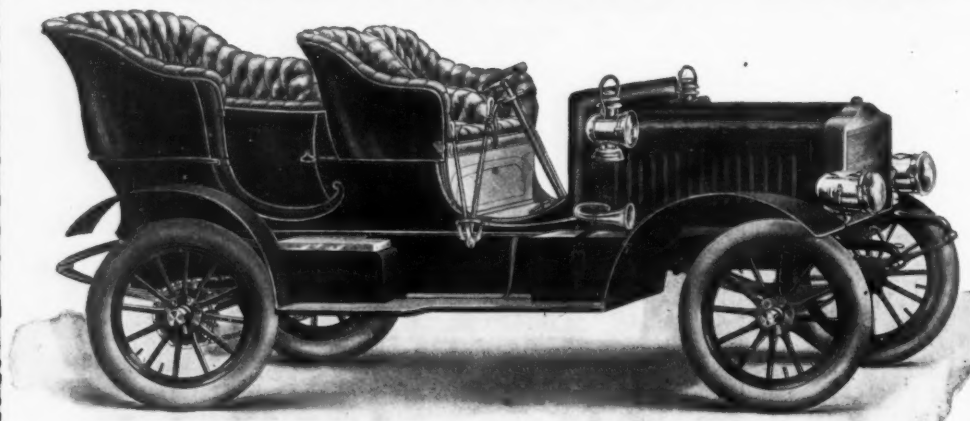
# 1906

Models  
Ready for  
Delivery

## THE LAMBERT

## The Famous Friction Drive Car

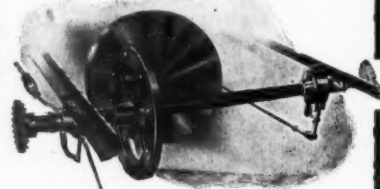
It will pay you to investigate the Lambert for two reasons:  
1st. Simplicity of Construction      2d. Cost of maintenance



Model 7. 34 H. P. Price, \$2,000

NO COMPLICATED PARTS  
We are booking orders on the following models:

Model 8. 34 H. P.	
Heavy Touring Car,	
Model 7. 34 H. P.	
Touring Car	\$2,000
Model 6. 18 H. P.	
Touring Car	\$1,500
Model 5. 16 H. P.	
Touring Car	\$1,200
Model 4. 16 H. P.	
Light Touring Car	\$1,050
Model A. 16 H. P.	
Runabout	\$900



A Gearless Transmission

This car has a 14 inch road clearance, capable of making 55 miles per hour, and has a detachable tonneau.

Write for descriptive matter on the above models.

**THE BUCKEYE MANUFACTURING CO., Anderson, Indiana**

Members American Motor Car Manufacturers' Association, Chicago

When Writing to Advertisers, Please Mention Motor Age.

# The Aristocrats of Motordom

comprise a line of vehicles made up of Imperials, Stanhopes, Surreys, Depot Carriages, Station Wagons and Broughams.

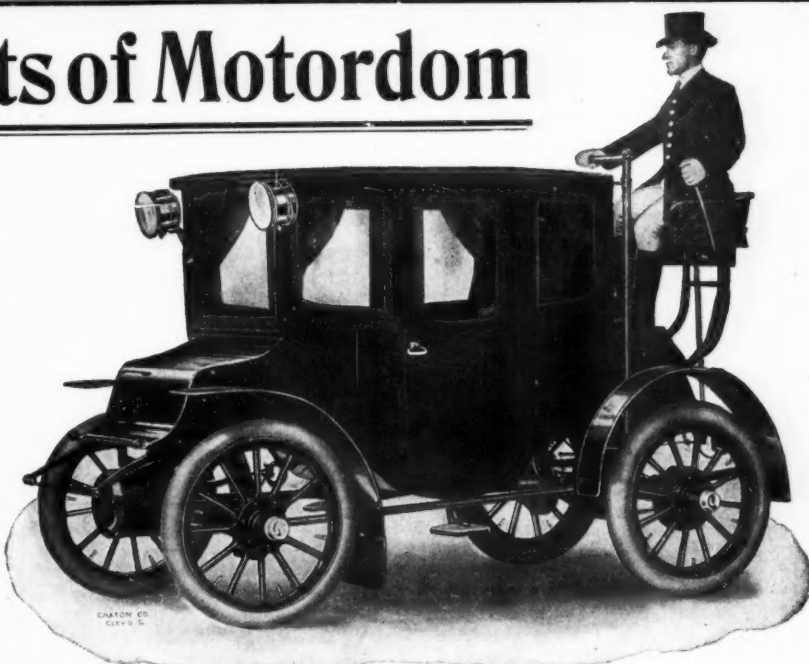
(Interior and exterior driven)

THE BAKER BROUGHAM was designed to meet the demand for a high grade vehicle seating four, with seat for chauffeur and footman.

It is lighter by several hundred pounds than any similar vehicle, yet its combination of perfect mechanical construction and the best materials throughout renders it extremely strong and durable.

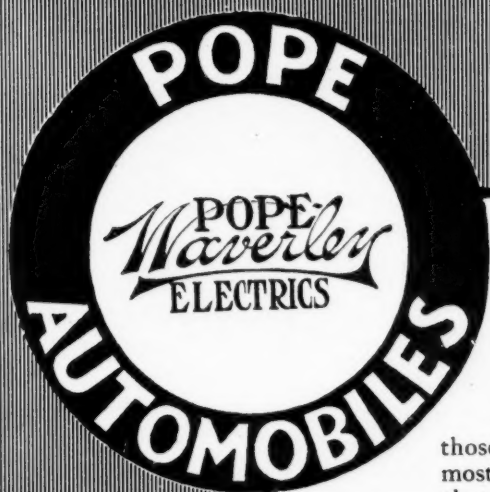
THE BAKER BROUGHAM is correct in every appointment and meets the requirements of the most fastidious. Its finish and upholstery are superb in every detail. It has an abundance of speed and power, while its simplicity of operation and ease of control furnish to its owner a certain degree of safety that is most gratifying.

BAKER agencies in the principle cities. Write for catalog.



## The Baker Motor Vehicle Co.

24 JESSIE ST., CLEVELAND, OHIO



## Profit to the Dealer

The sales of Pope Waverley Electrics last year increased 60 per cent. over the year before; and the past three months have increased 60 per cent. again over that. We are not the only ones who have increased sales, and we are glad, because it shows that the **ELECTRIC** is being appreciated by the public and by some **AGENTS**. Are you among those agents who sell gasoline cars only? If so, you are neglecting the most profitable part of your business. Many of our agents have told us, that, had it not been for the **ELECTRIC** part of their business this year, they would have lost money. The **ELECTRIC** is an **all-the-year-round carriage**. Its sales are almost as great in fall and winter as in the spring and summer. Are you neglecting a chance to make money at this season of the year? What you can make now is all velvet. We exhibit in New York at Madison Square Garden only.

### Waverley Dept., POPE MOTOR CAR COMPANY

INDIANAPOLIS, IND.

New York City: 1733 Broadway Washington, D. C.: 819 Fourteenth St.  
Boston, Mass.: 223 Columbus Ave. San Francisco, Cal.: 451 Mission St.

# Why Goodyear Detachable Auto Tires Won't Rim Cut

WHEN an Auto Tire gets rim-cut, it's time to feel for your pocket-book and ask yourself, "What tire shall I get next time?"

For a rim-cut tire is pretty near its finish.

And the chances are ten to one that if you are forced to ride around the block on a deflated ordinary tire with ordinary rims your tire will be rim cut before you get there. Because ordinary rims are just like a dull jack-knife.

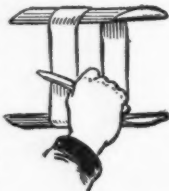


Fig. 1



Fig. 2



Fig. 3

like Fig. 1 you couldn't do it, because your strength would not be great enough. But if you take the strap like Fig. 2, with a little sawing you can cut it. That's exactly the



Fig. 4

way the ordinary rim cuts the ordinary tire. When the tire is inflated, like Fig. 3, even the tremendous weight of the car is not sufficient to cause the rim



Fig. 5

to cut the tire. But just as soon as it gets partly deflated or flat, like Fig. 4, then the rim begins to cut it, just as the knife did the strap in Fig. 2.

Now look at the picture of the Goodyear Auto Tire on the Goodyear Universal Rim (Fig. 5.) The portion of the rim against which the tire rests forms the arc of a large circle. That rim can

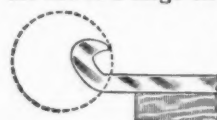


Fig. 6

no more cut the tire than you could have cut the strap by using the handle of the knife instead of the blade.

Notice the edge of the ordinary rim used with ordinary tires (made into a circle), in Fig. 6, and compare with the Goodyear Universal Rim, used with Goodyear Auto Tires (Fig. 7.) Then you can see more clearly what we mean.



Fig. 7

We (and others) have ridden the Goodyear Auto Tire on Universal Rims absolutely flat for 25 miles on rough roads without serious injury to the tire. We have the evidence if you would like to see it.

This is only one reason why wise riders are specifying Goodyear Auto Tires on Universal Rims for their new cars. Our "Good News Book" gives ALL the reasons. It is intensely interesting to Manufacturers, Dealers and Riders seeking relief from tire troubles.

**THE GOODYEAR TIRE & RUBBER COMPANY, Wallace Street, Akron, Ohio.**  
 Branches in following cities: Boston, 6 Merrimac St.; New York, 253 W. 47th St.; Chicago, 110 Lake St.; Cincinnati, 242 E. Fifth St.; St. Louis, 712-714 Moran St.; Cleveland, 69 Frankfort St.; Philadelphia, 1521 Spring St.; San Francisco, Geo. F. Moore & Co., 696 Golden Gate Ave.; Buffalo, 719 Main St.; Denver, 220 Sixteenth St.; Detroit, 242 Jefferson Ave.

**We furnish ALL SIZES of Tires with BAILEY TREADS, if desired**



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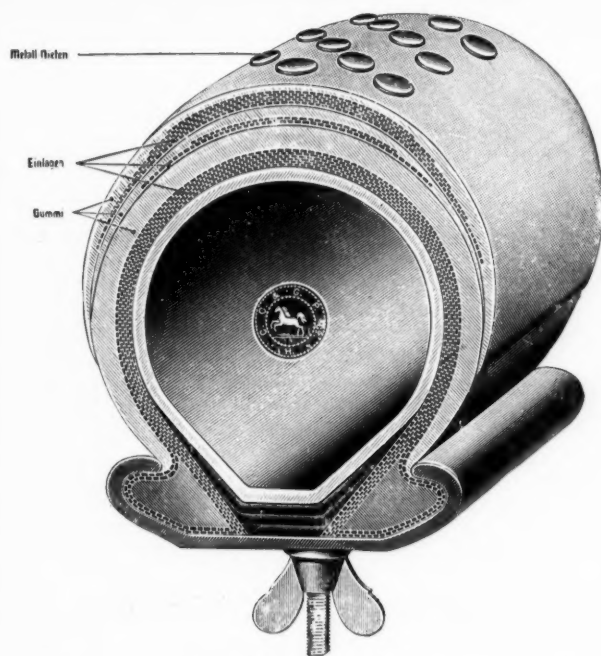
for the  
Fourth Annual  
ORMOND-DAYTONA  
RACES

On the Ormond-Daytona Beach, Florida,  
January 22d to 27th, 1906

**The Annual Aristocrat of Race Meets  
Where Speed Kings are Crowned**

Plan a brief vacation .... Escape cold weather for a few  
days by a trip to balmy Florida .... You will see nature's  
finest automobile speedway .... Why not take your car  
with you? .... For all particulars as to Railroad, Steam-  
ship, Hotel Accommodations, Programs of Meet, etc.,

**Address ... W. J. MORGAN, Gen'l Manager, 116 Nassau Street, New York**  
 Representing the Florida East Coast Automobile Association



The new "STEEL-STUDED CONTINENTAL TIRE" is a very resilient tire, especially constructed with heavy walls and tread. Over this is built an extra heavy tread with many layers of the strongest Egyptian cotton canvas, which protect the carcass of the cover and the inner tube from the steel studs, which are firmly held in place by being vulcanized into the mass of material of which this outer tread is constructed.

These tires are the safest for slippery streets, asphalt, etc., and are already in use on many of the better class automobiles.

**YOU SHOULD HAVE THEM FOR  
YOUR WINTER EQUIPMENT**

## The Continental Caoutchouc Co.

**EMIL GROSSMAN, Gen. Mgr.**

**FACTORY: HANOVER, GERMANY**

**43 Warren St., New York**

WE WILL EXHIBIT at Madison Square Garden, New York, January 13-20, 1906, space 147. 69th Regiment Armory, New York, January 13-20, 1906, room "L." Coliseum, Chicago, February 3-10, 1906, spaces 274-278.



**Timken-Lemoine Front Axle (Roller Bearing)**

**T**IMKEN Axles and Roller Bearings are simply perfect in principle, design, construction and in operation. They *do what others almost do.*

That's why they meet the requirements of exacting engineers of the leading automobile manufacturers. They're made a little better than seems necessary—result, they *do what others almost do.*

We have an efficient hustling corps in our selling organization, on the theory that our business is to assist you to increase your business.

Put the burden of the proof on us, use our axles and bearings and your experience will be that of thousands of others—not a dissatisfied customer.

Write us about it. Direct drive axles, divided and solid rear axles, knuckles, special bearings and cups, wheels and channel rims.

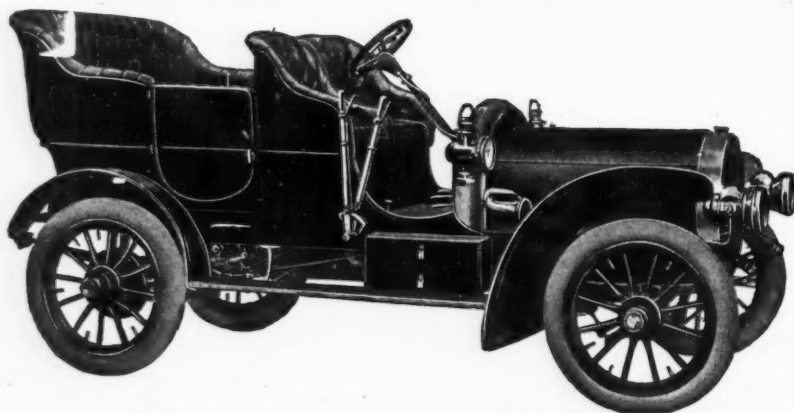
## Timken Roller Bearing Axle Co.

**General Office and Works, Canton, Ohio**

# National

## Breaks World's 24-Hour Record

A National Stripped Stock Car at Indianapolis, November 16-17, made 1,094 3-16 Miles in 24 Hours, breaking the former World's Record by 78 9-16 miles, and 1,000 Miles in 21 Hours, 58 Minutes and 4-5ths of a Second, breaking the former record by 1 Hour 35 Minutes 19 1-5 Seconds. Also breaking many other records too numerous to mention in this space and giving a most convincing demonstration of the **Unfailing Reliability of Nationals.**



Model D—NATIONAL—One of the same kind fully equipped.

**"Watch for the Round Radiator"**

Write us for anything else you may want to know.

**National Motor Vehicle Co.**

1006 E. 22d St.

INDIANAPOLIS, IND.

Member American Motor Car Mfrs. Association, Chicago

**DISTRIBUTORS:**

Linseott Motor Co., 163 Columbus Ave., Boston  
Homan & Schultz Co., 38th St. & Broadway, New York  
Ralph Temple Auto Co., 310 Michigan Ave., Chicago  
Tioga Auto Co., Broad & Tioga Sts., Philadelphia  
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Nat'l Motor Car Agency, 705 S. Main St., Los Angeles

# KINGSTON

## 1906 TYPE-K-AUTOMATIC CARBURETOR

**EASY TO UNDERSTAND EASY TO OPERATE**

Fuel controlled entirely by equalizing automatic air valves.

Will increase **POWER** and **CONTROL** of any 1905 FORD or OLDS car, or money back.

Positively will not accumulate fuel in, or **CLOG LONG INLET PIPES.**

Perfectly adapted to gasolene cars, boats, airships and motors for any kind of service.

Built for business by the oldest manufacturers in the business.

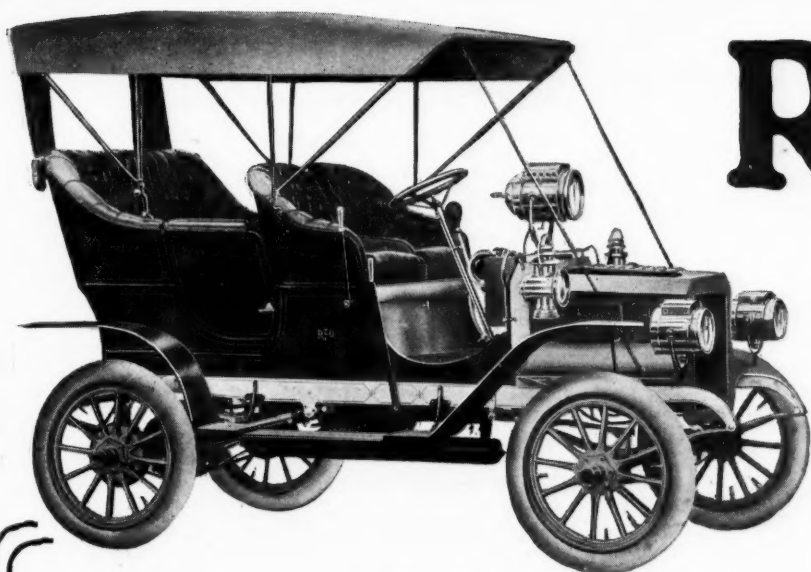
**OVER 31,000 KINGSTON CARBURETORS IN USE**

### KINGSTON MUFFLER

**IMPROVED FOR 1906**

**BYRNE, KINGSTON & CO.,**

KOKOMO, INDIANA, U. S. A.



# REO

REO Touring Car, 16 horse-power, 1600 pounds, 90-inch wheel base. Four or five passengers. Side-door detachable tonneau. 35 miles per hour. \$1250.

## A Great Economy Test

A REO 16 horse-power bus with the same engine as the touring car shown above won the National Trophy and two other prizes in the New York Motor Club's great six-day Economy Test, by carrying its load 682 miles at a total cost (including ferriage) of \$2.93 per passenger.

The four-seated REO Runabout (price \$675) won the gold medal for cars up to \$1500, and one other prize, carrying four passengers 682 miles for \$3.38 per passenger.

Freeze-proof, jar-proof radiator, perfect and positive oiler, simple operation and simple enduring strength are some of the features which make REO the car that practical motorists want.

Write for the REO book that tells why.

**REO Motor Car Co.,** Sales Department, Lansing, Michigan  
R. E. OLDS, Pres. R. M. OWEN, Sales Mgr.  
Agencies throughout the United States.

# MICHELIN

Go Faster—Last Longer

**Why?** MORE PURE RUBBER  
EXCLUSIVE FABRIC  
SUPERIOR VULCANIZATION  
UNEQUALED WORKMANSHIP



MICHELIN TIRE AMERICAN AGENCY, Inc.

Telephones: 760-761 Madison Sq.

6 WEST 29TH STREET, NEW YORK

E. D. WINANS, Gen'l Mgr.

Branches in all large cities

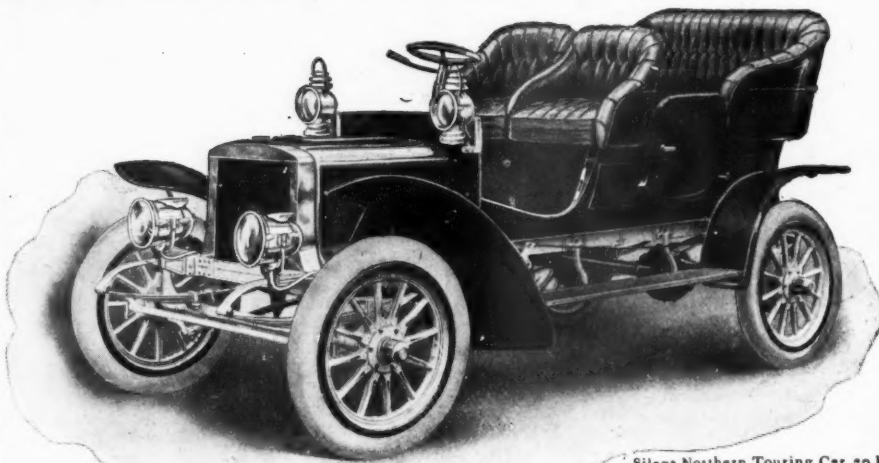
# Northern

¶ You will find in the Silent Northern mechanical refinement not equaled—even in cars sold for several times the price.

¶ Northern Crank Case and Gear Case combined, protecting all mechanism from mud, dust and water; Northern Three-Point Motor Support, which guarantees a perfect alignment of driving mechanism under all conditions, and Northern Oil Box, which insures perfect lubrication in any temperature, are exclusive advantages.

¶ Only Three vital points to oil—all belts, chains, strut rods and truss rods eliminated and no side levers.

¶ In luxury of upholstery it is not excelled by any. The quietest and easiest running car in the world—and the only car at the price equipped with *four-inch* tires.



Silent Northern Touring Car, 20 h. p., 5 passengers, four-inch tires, gas and oil lamp equipment, \$1800.

**1906 MODELS**—Model "K" 30 h. p. Touring Car with gas and oil lamp equipment, \$3,000. 20 h. p. Limousine, \$2,500. 20 h. p. Touring Car with gas and oil lamp equipment, \$1,800. 7 h. p. Sturdy Northern Runabout with lamp equipment, \$650.

Write for Circular No. 14; contains important advance information.

**NORTHERN MANUFACTURING CO., Detroit, U. S. A.**

Member of Association of Licensed Automobile Manufacturers

Chicago Agents: KELLEY-HUNTER CO., 1449 Michigan Avenue

## Compound Doctor's Stanhope

A Doctor Can't Afford To Take Any Chances

**Free from NOISE and VIBRATION**

**Price, \$1,400.00**

12-15 H. P.

The use of any of our models ensures Endurance and Reliability.

Only the very best material obtainable, assembled by the most expert mechanics, enters into its construction.

Chassis is the same as used in our Model Four, Light Touring Car, which carried five people in the New York Motor Club's recent Economy Test and defeated every touring car entered.

**THE E. H. V. CO., Middletown, Conn.**



## Don't be afraid of water freezing

You can enjoy motoring in the winter time without subjecting the circulating system of your motor-car to the dangers of freezing and bursting.

All you need is one charge of

## No-Mor Auto-Freeze

Put it in your circulating system and you won't have any freezing troubles even at 10 degrees below zero.

Already dissolved, doesn't clog the system; contains nothing that will corrode the metal or injure the rubber.

It's a wise precaution to use No-Mor Auto-Freeze and is liable to save you many times its cost. Think of the money you would have to spend to repair the damage if the water pipes should burst. Think of the inconvenience and delays to which you would be subjected. Do you want to run these risks when they can be overcome so easily?

**75 cents** a gallon at dealers' or f. o. b. Cleveland, Ohio. **Sold only in 5 and 10-gallon cans.**

### Chemist's Report

THE GENERAL LABORATORY CO.  
Chemists  
125 Quebec St. Cleveland, Ohio

"We have examined and tested No-Mor Auto-Freeze and find that it will not corrode brass, aluminum, copper, galvanized iron or solder, and that it will remain fluid at 10 degrees below zero Fahrenheit. Another good feature of the product of this formula is that it will not crystallize out, hence no danger of clogging the circulating system."

THE GENERAL LABORATORY CO.  
(Signed) F. N. Sealand.

### Dealers find it pays

to handle No-Mor Auto-Freeze. There is a demand for it and selling is easy. Write for items and full particulars.

### Owen Chemical Co.

45 Vincent Street

Cleveland, Ohio

## "Firestone" Side-Wire Tires

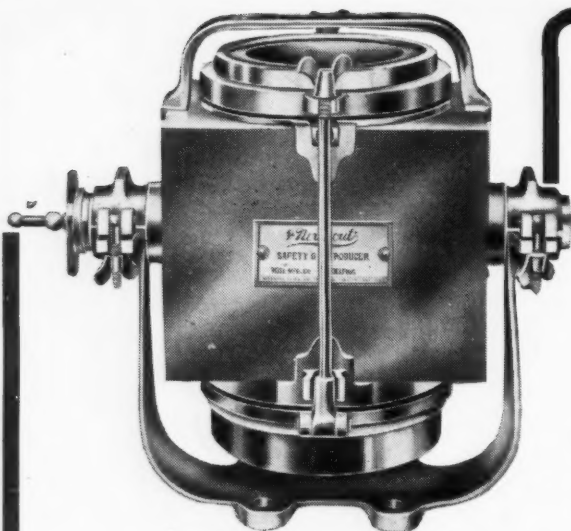
are used on nine-tenths of all the commercial vehicles manufactured. Why? Because manufacturers of commercial automobiles have learned by *hard experience* that the "Firestone" is the only tire that will withstand the hard knocks that are inseparable from commercial machines.

Firestone Tires wear like iron. They hold their shape—they give satisfaction.

**Then Why Not "Firestone?"**

**Firestone Tire and Rubber Co., Akron, Ohio**

New York Chicago Philadelphia Boston St. Louis  
San Francisco Los Angeles



*The Neverout*  
TRADE MARK

Patent Invertible

## Safety Gas Producer for 1906 is now ready

A still further development of the ingenious model which created such a stir last year.

Many improvements have been made and today the superiority of the Neverout Safety Gas Producer over other lighting systems is more marked than ever before.

The gas is of the driest and purest quality, and costs much less than when supplied by any other method—less than  $\frac{1}{2}$  cent per hour.

Always ready for instant use and one movement of the hand starts the generation of gas. Extinguished at any time without after-generation or odor or waste.

This simple, efficient gas producer is bound to grow as famous as

*The Neverout*  
TRADE MARK

## Mirror Lens Searchlight

Money back if not satisfactory. Write for free illustrated catalogue.

**ROSE MANUFACTURING CO., 912 Arch Street, Philadelphia**  
*Largest Searchlight Factory in the World*

Every penny spent for

## FISK TIRES

is regained in value by the purchaser.  
We believe in giving just a little more in tire quality than any other maker for what you spend; it emphasizes the fact that we are earnest in our efforts to extend to our patrons a "Square Deal."

Compare for yourselves the difference in Quality between Fisk Tires and those of other makes.

They actually cut your tire expense in two, doing away with all exasperating "tire troubles," and turn drudgery into uninterrupted pleasure. Our methods of handling Fisk Tire users will appeal particularly to those who appreciate a "Square Deal."

**The Fisk Rubber Co., Chicopee Falls, Mass.**

### BRANCHES

New York, 754 Seventh Ave.  
Boston, 226 Columbus Ave.  
Springfield, 40 Bridge St.  
Philadelphia, 138 N. Broad St.  
Minneapolis, 704 Hennepin Ave.

Atlanta, 103 N. Pryor St.  
Syracuse, 423 S. Clinton St.  
Buffalo, 893 Main St.  
Cleveland, 318 Euclid Ave.  
Los Angeles, 1034 Main St.

Detroit, 254 Jefferson Ave.  
Chicago, 1251 Michigan Ave.  
Kansas City, 1830 Main St.  
St. Louis, 3908 Olive St.  
San Francisco, 114 Second Ave.

You can deal with us from a distant point the same as at the factory.

# Columbia

## Electric Town Carriages

NEW MODELS NOW READY

The cut shows the new Columbia Electric Brougham, Mark LXVIII, with Lightened Construction, Pneumatic Tires, 5-Speed Control, Special Exide Battery and other improvements.

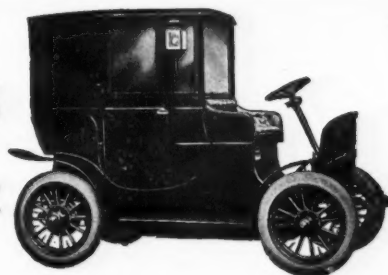
With same Chassis we supply Landaulet, Hansom and Victoria Bodies.

Send for Bulletin No. 75

### ELECTRIC VEHICLE COMPANY

Members Association  
Licensed Automobile  
Manufacturers

### Hartford, Conn.



New York Branch: 134, 136, 138 West 39th St.  
Chicago Branch: 1413 Michigan Ave.

Boston: Columbia Motor Vehicle Co., 74, 76, 78 Stanhope St.

Washington: Washington E. V. Transportation Co., 15th St. and Ohio Ave.  
Philadelphia: Pennsylvania Electric Vehicle Co., 280 North Broad St.

## 8,000 MILES

Perfect Satisfaction,  
Never Breaking

HOTEL TOURAINE  
BOSTON

July 3d, 1905.

BRAMPTON BROS., Ltd.,

Dear Sirs—It is a pleasure for me to say that the chains made by you and used on the world's tour have given perfect satisfaction, never breaking. They have carried us over New Zealand's mountains, the bad roads of Australia, and through many countries. The set sent you herewith has been used for 8,000 miles.

Very truly yours, (Signed) CHAS. J. GLIDDEN.

Weight of car, baggage and passengers, 4200 lbs.

### 1906 CARS

Do you want this kind of chain on your 1906 car? You can have it if you ask the manufacturer to fit the Brampton chain to your car and with no extra expense to you or the manufacturer. All standard sizes in stock to fit American and Foreign cars.

Catalogue mailed on request.

## CHARLES E. MILLER

Manufacturer, Jobber,  
Exporter and Importer

Home Office, 97-99-101 Reade St., New York City

BRANCHES  
Broadway and 38th St., New York. Philadelphia—318-320 N. Broad St.  
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## "GEECEE," The Sparker

This battery is unequalled as an ignitor

It is higher in capacity and voltage than any wet battery now on the market.

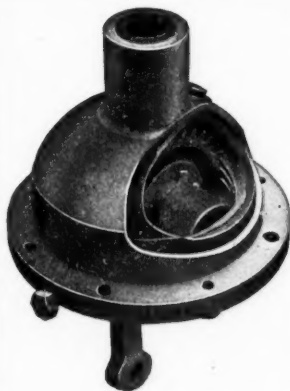
The Electorlyte (acid) is in suspended form. It is made dry by a special process, enabling it to retain its moisture indefinitely.

Therefore it will never shock you by leaking out and ruining clothing, connections and anything else it comes in contact with. You have no such protection in the use of a wet battery.

## Royal Battery Co.

NEW YORK

National Sales Corporation, Factory Sales Mgrs., 256 Broadway, New York



## BROWN-LIPE GEARS

IRREVERSIBLE STEERING  
BEVEL AND CHAIN DRIVE DIFFERENTIAL  
MANY SIZES AND MODELS  
SLIDING GEAR TRANSMISSION

K. FRANKLIN PETERSON, 166 Lake St., Chicago.

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318-320 No. Broad St., Philadelphia.

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POST & LESTER Co., Hartford, Conn., Eastern Sales Agts.

} Direct Factory Salesmen.

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## BROWN-LIPE GEAR CO.

200 South Geddes Street

SYRACUSE, N. Y.

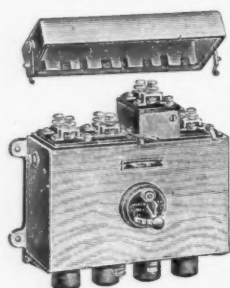
*Self-Starting from the Seat*  
(With Make and Break Ignition)

# "Matheson"

"America's Finest Motor Car"  
1906 Models—40 and 60 H.P.

Our New Factory now build-  
ing, in..... **WILKES-BARRE, PA.**  
will be one of the largest and most modern automobile plants in existence. We will  
move into this new plant about January 1, 1906. Address until then.....

**MATHESON MOTOR CAR CO.**  
Holyoke, Mass.



## REGARDING COILS

Our 1906 line is a revelation. By  
extensive tests of every nature it  
has proved itself the most rapid,  
most economical, most durable  
and most reliable in the world  
(bar none).

## PITTSFIELD



means Perfection sure, in matters pertain-  
ing to the Ignition System of a motor car.  
You cannot puncture or rupture a Pitts-  
field Coil. The Perfect Insulation is  
PROOF against these troubles. Pittsfield  
Coils are in every possible detail,

## PERFECT

### THE PITTSFIELD

1906 Special Jewel Spark  
Plug prevents fouling or  
short circuiting. Sparking  
point and chamber between  
core and shell thoroughly  
cleaned at each explosion.

### THE PITTSFIELD

1906 Commutator or Timer is  
strong, reliable, and we guar-  
antee a positive contact under  
all conditions.  
Get details before contract-  
ing for 1906 requirements.

**PITTSFIELD SPARK COIL CO., Pittsfield, Mass.**

## EQUIP YOUR CAR WITH THE PREST-O-LITE GAS TANK

No Waste.  
No Odor.  
Tips Never  
Clog  
Needs no  
Attention.



SIMPLE  
ENOUGH

When you want  
gas, turn it on.  
When you don't,  
—turn it off.

## Extreme Cold Cannot Affect It ALWAYS READY FOR USE

An Absolute Necessity where Good Service  
and Convenience are Considered worth while

OVER 5,000 SOLD THIS SEASON

Write for Booklet, List of Agents, Etc.

**PREST-O-LITE CO., - Indianapolis, Ind.**

Exclusive Licensees under patents of the Commercial Acetylene Co.

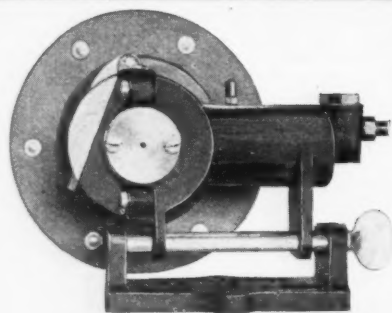
AGENTS IN MOST CITIES.

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WE WANT THEM IN ALL



## The P. T. C. Power Tire Pump

It is designed to inflate pneumatic tires by POWER  
driven by friction from fly wheel. Always in place.  
Started by turning a screw. Write for circular.

**The Pacific Tucking & Manufacturing Co.**

471-3 18th Street, BROOKLYN N. Y.

When Writing to Advertisers, Please Mention Motor Age.



## AN IDEAL XMAS PRESENT THE AUTO-METER

A most acceptable gift to any friend who owns a car. Its presence on his dashboard will be a constant and pleasant reminder of the donor.

**It Tells How Fast and How Far**

a car travels, with absolute accuracy. We are issuing a handsome engraved Christmas certificate which entitles the bearer to an Auto-meter. *Write for particulars.*

**WARNER INSTRUMENT CO.,**

**55 Roosevelt Ave., Beloit, Wis.**

Warner Instrument Co., 143 Federal St., Boston Mass.

Warner Instrument Co., 1691 Broadway, New York City, N. Y.

Warner Instrument Co., 804 Steinway Hall, Chicago, Ill.

Northern California, G. P. Moore & Co., San Francisco, Cal.

Southern California, Heineman & Pearson, Los Angeles, Cal.



# DIETZ

**THE  
DIETZ  
OIL LAMPS**

are fitted with removable Aluminum Reflectors, drawn up out of very heavy gauge aluminum. The Reflectors can be taken out for cleaning without any trouble whatever and replaced just as easily. Those who have personally used Lamps made in the usual way can appreciate how great a convenience this is.

**R. E. DIETZ COMPANY, 37 Laight St., New York**  
ESTABLISHED 1840

# WE HAVE IT

**Absolutely Tested**  
by all kinds of Herculean Work

**Positively Proved**  
by six months of faultless performance

Cylinders surrounded by Hood with Fan connection on outer end, blowing a **CONTINUOUS HURRICANE OF COLD AIR AROUND AND OVER TOP OF CYLINDERS**

# TREBERT

**THE DETAILS**

15 H. P., developed at 1500 revolutions.  
Bore and stroke, 3 1/4 inches.  
Length of Motor over all, 29 inches.  
Crank Shaft diameter, 1 1/4 inches.  
Total bearing surface on Crank Shaft, 10 1/4 inches.  
Bearing on Connecting Rods, 2 x 1 1/4 inches.  
Bearing on Wrist Pin, 1 1/4 x 1 1/4 inches.  
Connecting Rods of drop forgings with phosphor bronze Crank Shaft.

Base and Crank Case of Aluminum.  
Width of Motor from end of arm to end of arm, 19 1/4 inches.  
Center of Crank Shaft to bottom of Motor, 4 1/4 inches.  
Center of Crank Shaft to top of Motor, 18 inches.  
Total Height of Motor from bottom of Crank Case to top of Exhaust Pipe, 22 inches.  
Total Weight, 225 lbs.  
Lubrication by Splash Feed and constant level automatic lubricator.

## TREBERT GAS ENGINE CO

BOTH AIR AND WATER-COOLED MOTORS FOR MARINE AND AUTOMOBILE PURPOSES  
BUILDERS OF TRANSMISSIONS AND CLUTCHES :::: LIGHT POWERED CARS REBUILT

REFERENCE: JOHN WANAMAKER, NEW YORK

**180 WEST MAIN STREET, ROCHESTER, N. Y.**

**HAVE YOU SEEN THE NEW. KOKOMO MECHANICALLY - ATTACHED**

# KOKOMO

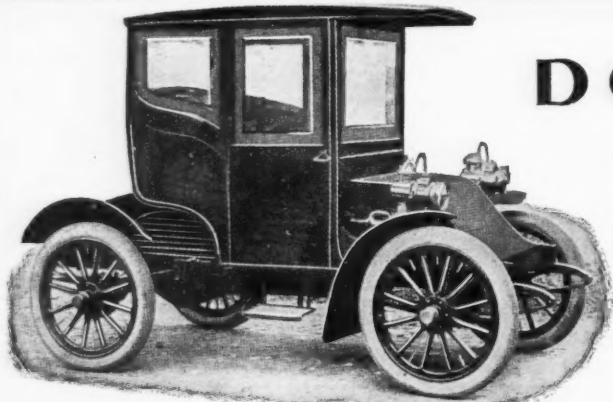
**AUTOMOBILE TIRE?**

**It is just what you have been looking for.**

Quickly attached and detached.  
Creeping and Rim Cutting entirely avoided.  
Made of the very best material and workmanship throughout.  
Write us for full particulars.

## KOKOMO RUBBER CO.,

KOKOMO, IND.



## A SPLENDID DOCTOR'S CAR

### THE ADAMS-FARWELL MOTOR CAR

Three Cylinder Gasoline Motor :: Revolving :: Air-Cooled

Operated from rear seat or from folding front seat.  
All windows may be lowered, making an open car.

NO WATER. NO RADIATOR. NO FLYWHEEL. NO MUFFLER.

AUTOMATICALLY GOVERNED. NO FAN.

Cylinders 5 in. Bore. Displacement 265 cu. in. 20-25 Horse Power.

**\$2,500**

Chicago Salesroom: 1536 Michigan Ave.

**THE ADAMS COMPANY DUBUQUE, IOWA,  
U. S. A.**

## GAS-AU-LEC "THE SIMPLE CAR"



Elegant in Finish  
Luxurious in Appointments

Built by Skilled Workmen from the best Materials Obtainable

**The Simplest Gasolene Car in the World**

—both as to construction and control, and the easiest to operate and maintain.

"Marks a New Era in Automobile Construction."

40-45 Horse Power, \$5,000

**Corwin Manufacturing Company**  
Peabody, Mass., U. S. A.



*High Class Touring Cars  
Made and Tested in the Berkshire Hills*

**1906 Models Ready December 15th.**

16 H. P. \$2,000.

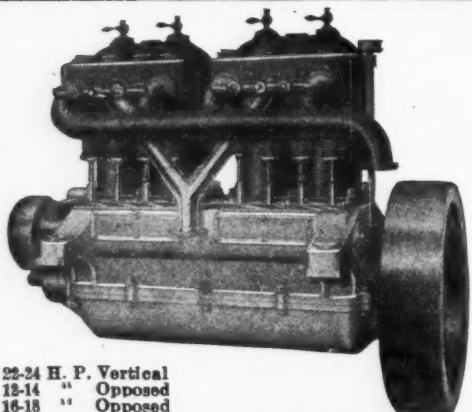
25 H. P. \$2,500.

40 H. P. \$4,500.

**Douglas Andrews Company,**

SELLING AGENTS.

1623 BROADWAY, NEW YORK.

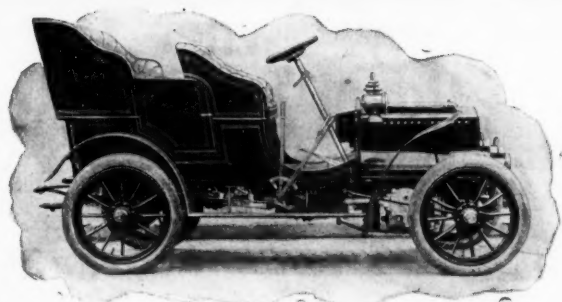


22-24 H. P. Vertical  
12-14 " Opposed  
16-18 " Opposed

## "DON'T DELAY" PLACING YOUR ORDER FOR BEAVER MOTORS

For your 1906 cars. Efficient, light and durable.  
Our prices will interest you. Performance and  
deliveries guaranteed. Correspondence solicited.

**BEAVER MFG. CO., Milwaukee, Wis.**



## Wolverine D

Double-opposed Motor  
Under the Hood

Bevel Gear Drive

3-speed Sliding Gear  
Transmission

18 Horsepower (Actual)

Price, \$1,250.00

Wolverine Automobile and Commercial  
Vehicle Company

Dept. "C."

Dundee, Mich.

## THE ANDERSON SPEED METER



## AN IDEAL XMAS GIFT

Bell rings miles per hour. Meter and clock combined. Adjusted in 15 minutes. Attention of driver is not distracted. No light required at night. Size, 4½x5½x3½. Handsome brass weather-proof case. Price \$25.00, delivered in U. S. Circular on request.

The Electric Speed Meter Company  
141 EAST 4th STREET CINCINNATI, OHIO

## The Wray Compound Air Pump

with pressure register, price complete, \$6.00

Inflate your tires to the following pressure:

4 1-2 in. Tires		3 1-2 in. Tires	
Ft.	Re.	Ft.	Re.
60 lb.	75 lb.	70 lb.	80 lb.

4 in. Tires		3 in. Tires	
Ft.	Re.	Ft.	Re.
60 lb.	75 lb.	60 lb.	70 lb.

Wray Pump &  
Register Co.

191-193 Mill St.,

ROCHESTER, N.Y.

Send for complete catalog.



Patent Allowed

## MOLINE for 1906

Model "A" 30-36 H. P. \$2500.00

Model "C" 18-20 H. P. \$1750.00

Both the above have four cylinder vertical, water cooled motors. Cylinders cast in pairs. Valves all mechanical and interchangeable. Pressed steel frames. Three speeds forward and reverse. Sliding gear transmissions. Mechanical oilers. Storage cells for ignition.

Model "G" 16 H. P. \$1000.00

Double cylinder opposed motor under body with single chain drive. Planetary transmission, no internal gears. Engine bearings of liberal dimensions and easily adjustable. Mechanical oiler. New design of water pump. Double side entrance detachable tonneau body.

All three Models have cylinders, pistons and piston rings accurately ground to size.

All three Models have double side entrance bodies with divided front seats.

All three Models have mechanical oilers that force oil direct to the bearings—not force it part way and then let it drop the rest of the way.

All three Models are top notch value for the money. AND WE CAN TAKE CARE OF ONLY A FEW MORE DEALERS.

Advance circular ready for distribution.

Moline Automobile Co.

EAST MOLINE, ILLINOIS, U. S. A.

## YOUR NAME IS IN

EVERYBODY AUTO READ

### The Auto Owner

WHY THEY AUTO

It contains the most complete set of touring maps of the U. S. and Canada ever published.

ALSO

#### The Anatomy of the Automobiles

Showing with detailed illustrations the inside workings of the leading American and foreign Automobiles.

AND

#### "Diseases of

Gasoline, Steam and Electric Automobiles, Motor Cycles and Power Boats, and How to Cure Them;" a practical treatise on the automobile, motor cycle and power boats for the "owner."

AND A

#### Directory of the Automobile Owners

In Mo., Ill., Ind., Ohio, Mich., and 100 of the largest automobile clubs in the United States.

ALSO

#### A Directory of Hotels and Dealers

in the United States and Canada.  
A postal will bring full information.

Price, Leather Bound, \$2.00  
Paper Cover, \$1.00

## THE AUTO OWNER PUB. CO.

617 Chestnut Street

DEPT. A.

ST. LOUIS, MO.

## Ask Any Owner Of A Royal Tourist.

This Letter is a Mild Sample.

Toronto, Dec. 2, '05.

THE ROYAL MOTOR CAR CO.,  
Cleveland, Ohio.

Gentlemen—My family are not particularly fond of driving in the cold weather, and I have, therefore, laid up my car until Spring. As I had the honor of signing the first Canadian order for a Royal Tourist, thought you would be interested in what I thought of the machine after one season's experience, and have only to repeat what Prince Louis of Battenberg had to say when traveling in the machine, "a wonderful car, good enough for any man living." Quite a number of your cars have come to Toronto, and the above few words express the opinion, I think, of all the owners.

Wishing you the success that your machine should bring, I am,

Yours truly,

WM. J. SMITH,

# ROYAL

THE ROYAL MOTOR CAR CO.  
CLEVELAND, OHIO

AGENTS

C. A. Duerr & Co., New York, N. Y.; G. J. Dunham, Boston, Mass.; The McDuffee Automobile Co., Chicago, Ill.; G. W. Caplin, Minneapolis, Minn.; Automobile & Supply Co., Ltd., Toronto, Ont.; Motor Shop, Philadelphia, Pa.; Westminster Automobile Co., St. Louis, Mo.; Standard Automobile Co., Pittsburgh, Pa.; Amos-Pierce & Co., Syracuse, N. Y.; Thompson Schoeffel Co., Rochester, N. Y.; Gus Boyer, San Francisco, Cal.  
Send for Catalogue.

## SOOTLESS

A NEW SOOTLESS  
MICA SPARK PLUG

### Indestructible

No Asbestos Packing to leak and get out of order.

### Double Explosion Chamber

A new and valuable feature.

### Strongest Plug Made

All Threads.



### Never Breaks

which makes all other so-called Sootless Plugs very expensive and nearly useless.

Extra heavy lengthwise Mica Insulation.

Doubly Protected on Engine End.

Guaranteed Six Months

Price, \$1.75

Manufactured by

## THE OAKES & DOW CO.

40 Sudbury St.  
Boston, Mass.

EXCELSIOR SUPPLY CO., Chicago, Ill., Western Agents

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Broadway, 36th and 37th Sts.  
Herald Square :: New York

MOST CENTRALLY LOCATED HOTEL ON BROADWAY

Under New Management Since January, 1905  
Completely Renovated and Transformed in Every Department,  
The Largest and Most Attractive Lobby and Rotunda  
in the City

Two Beautiful New Dining Rooms  
Superior Table d'Hôte Dinner every day from 6 to 9 p. m.

**The Famous German Rathskeller**  
Broadway's Chief Attraction for Special Food Dishes

Popular Music Better than ever before

400 Rooms **European Plan** 200 Baths

## HEADQUARTERS FOR AUTOMOBILISTS

Make Reservation for Rooms Early

RATES FOR ROOMS: \$1.50 and upward; \$2.00 and upward with bath. Parlor bedroom and bath, \$3.00, \$4.00 and \$5.00 per day. Parlor, two bedrooms and bath, \$5.00, \$6.00 and \$8.00 per day, \$1.00 extra where two persons occupy a single room

Write for Booklet

## Sweeney-Tierney Hotel Company

E. M. TIERNEY, Manager

# E & J

MEANS



Lamp No. 70

**QUALITY**  
In LAMPS  
REGARDING YOUR

**1906 LAMP EQUIPMENT**

We Guarantee to Please You in Both Quality and Price. Write us.

**Edmunds & Jones Mfg. Co.**

315 Riopelle Street, DETROIT, MICH.

## Automobile Lamp Manufacturers

WHO USE

### Licensed Burners Only

Atwood Manufacturing Co., Amesbury, Mass.  
Badger Brass Mfg. Co. (Solar), Kenosha, Wis.

Commercial Acetylene Co., New York City, N. Y.

R. E. Dietz Co., New York City, N. Y.

A. H. Funke, New York City, N. Y.

Gray & Davis, Amesbury, Mass.

Manhattan Lamp Works, New York City, N. Y.

Motor Car Equipment Co., New York City, N. Y.

New York Coach & Auto Lamp Co., New York City, N. Y.

Rose Mfg. Co., Philadelphia, Pa.

Scoville & Peck Co., New Haven, Conn.

Also all Auto Supply Houses.

The Von Schwarz Burners are, with the exception of the Crescents, the only licensed burners.

### Von Schwarz Burners

On Label: Von Schwarz and patent number.

On Steatite: J. v. S.

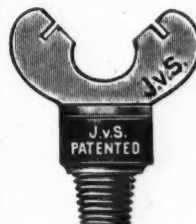
On Pillar: J. v. S.

&

M. K. & Co.  
Pat. Aug. 31, '97.



It is easy to avoid trouble—simply insist upon licensed burners.



## Hill Precision Oilers

The first requisite in a mechanical oiler is **efficiency**. To be **efficient**, it must possess absolute reliability, and give perfect and unfailing service under all conditions.

The second requisite is **economy**.

The Hill Precision Oiler combines both of these requisites—and the feature of economy is not confined merely to the saving in oil used, but in cutting out from the repair bill those items that always result from faulty lubrication. Read this:

### THE OSCAR LEAR AUTOMOBILE CO.

Automobiles

Corner Fourth and Gay Streets

Columbus, Ohio, September 5, 1905.

The Steel Ball Co., Chicago, Ill.

Gentlemen:—We desire to express our sense of the great assistance your Oiler was to us in our recent 6-day endurance and economy run at Long Branch. In a run of 3,202 miles made in a little over 6 days, we only used 10 gallons of oil and your oiler delivered the oil in an unfailing measure as set. Its operation was perfect at all times. The importance of all this we fully realize and its help in getting this record for our FRAYER-MILLER car.

Yours truly,  
THE OSCAR LEAR AUTOMOBILE CO.

### THE STEEL BALL COMPANY

840 Austin Avenue

CHICAGO ... .. U. S. A.



## 1906 SHAPE

WE EQUIP  
Pleasure Cars  
AS WELL AS  
Commercial Cars  
WITH

**Swinehart**  
TIRES

WHICH ARE ABSOLUTELY SATISFACTORY  
UNDER ALL CONDITIONS

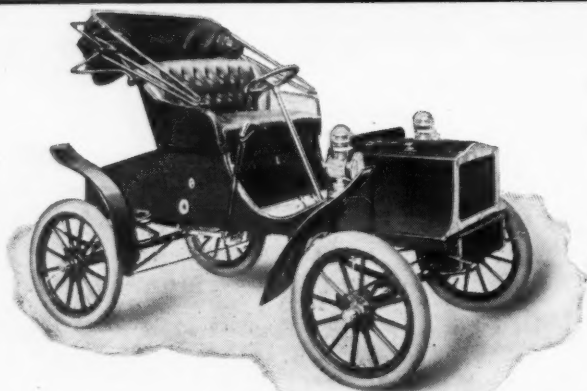
Write for Experiences of Others as Given in Catalog A

**Swinehart Clincher Tire & Rubber Co.**

AKRON, OHIO

New York City, 1773 Broadway Chicago, 1208 Michigan Boulevard

# GALE



1906 Model "D" **\$650** Minus Top \$600

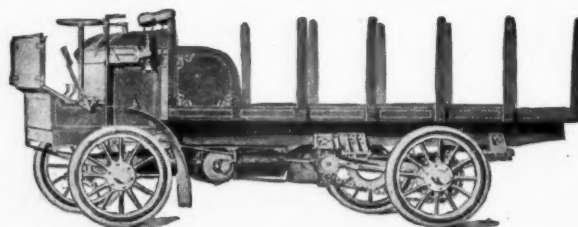
WHEEL-POST CONTROL, ROLLER BEARINGS to rear axle  
ANY TIRES, 28x3, Pneumatic, Solid or any other kind  
Equipment includes Lamps and Horn

OUR 1906 LINE in addition to Model D, will consist of two other models yet to be announced

Dealers who know the value of handling a GOOD CAR at a LOW PRICE will write us at once regarding 1906 agencies

**WESTERN TOOL WORKS** GALESBURG ILLINOIS

# KNOX



## NEW MODEL STAKE TRUCK

Developed along the sound lines of construction that have built up for us the largest Gasoline Commercial Car Business in the country.

**POWERFUL RELIABLE ECONOMICAL**

CARRYING CAPACITY, 6,000 LBS.

Cylinders Air Cooled Speed 12 Miles Per Hour

Chassis is adapted to bodies of various styles

Every firm using trucks of large capacity should investigate this new model. It is one of the finest products of our many years' experience in building cars for "All the Year Round" service. Write for particulars as to Waterless Knox D-4 Stake Truck.

Agents in All Principal Cities.

**KNOX AUTOMOBILE CO., Springfield, Mass.**

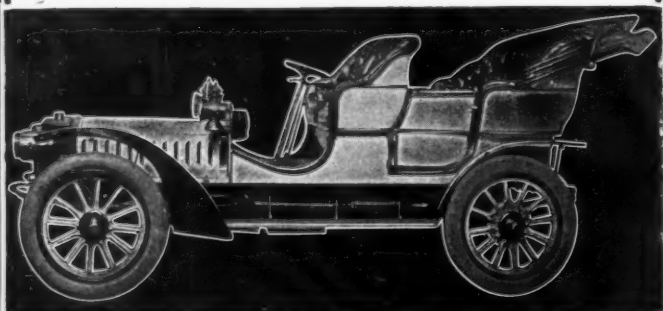
Largest and Oldest Manufacturers of Gasoline Commercial Cars.

We Exhibit in New York at Madison Square Garden Only, Jan. 13-20, 1906

MEMBERS A. L. A. M.

# AUSTIN

A LUXURIOUS CAR



## THAT LOOKS THE PART

Four-cylinder, 5 1-2 in. bore, 5 in. stroke, 50 h. p., weight 2,500 lbs., price \$3,500.

Full Extension Top, \$150.00 extra. 108 inch wheel base, 36 inch wheels, 4 1-2 inch tires, 44 1-2 inch rear seat. Bevel gear drive, direct on high speed. Our new sliding gear transmission has four forward speeds. Write for complete description.

**AUSTIN AUTOMOBILE CO.**  
GRAND RAPIDS :: MICHIGAN

## Keep Your Feet Warm

When riding or driving in your Auto use a

## LEHMAN CARRIAGE and AUTOMOBILE HEATER

Good for Sleighs, too

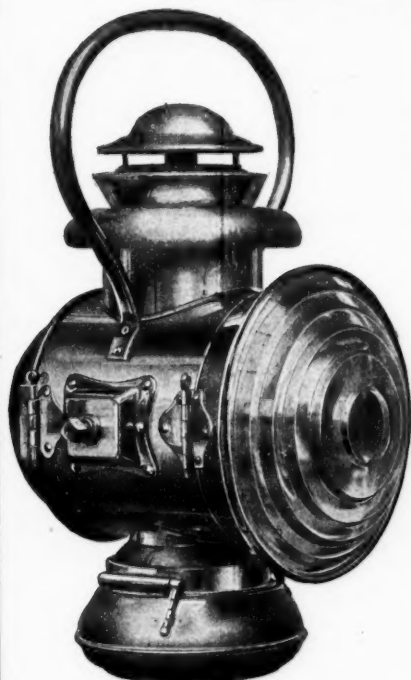


300,000 LEHMAN HEATERS are in use by leading physicians, automobilists, horsemen, farmers, etc., everywhere. They are universally known as the standard and best. They burn LEHMAN COAL at a cost of 2c for a day's heat; and from which there is no smell, smoke nor danger. Beware of imitations. Our goods have been on the market for over 20 years, and are known to be the BEST money and skilled labor can produce. Booklet telling more about them and giving prices is free for the asking to all who mention Motor Age.

**LEHMAN BROS., Mrs., 10 Bond St., New York**

J. W. ERRINGER, Gen. West. Sales Agt.  
45 East Congress St., Chicago, Ill.

## AN EPOCH IN THE HISTORY OF OIL LAMPS



### THE TOURIST

Cold Blast Lamp for 1906 is a wonderful light-producer and is the most dependable pathfinder made.

### See the Lens?

Burns common kerosene, will not blow out or jar out, emits no odor, and is entirely free from the usual lamp troubles.

We can't pick a car for you, but our oil lamps are so superior they are easily recognized as absolutely the best on the market. They are the result of thirty-five years' experience in making outdoor lamps.

Write for booklet  
showing complete line.

**C. T. HAM MFG. CO. ROCHESTER  
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## Automobile Knowledge

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### Money in Your Pocket

We are the only school that provides complete, practical, money-earning and money-saving training by mail in operating, repairing, constructing, and designing every kind of motor vehicle and motor boat.

We have special courses for owners, shop and factory employees, chauffeurs, motor boat and motorcycle users, and others.

There are only two ways of learning anything. One is slowly and tediously to gain the experience yourself; the other (and better) way is to take advantage of the experience of others.

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In the automobile industry, the demand for competent men is so great that ability, no matter how acquired, is considered above "pull" and length of service. This makes it easy for an ambitious man to qualify quickly for good wages and prompt advancement.

For further information, send us your name on the accompanying coupon. This will cost you only a moment of time and a postage stamp, which will be well spent for interesting and convincing literature.

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The Correspondence School of Automobile Engineering

Suite 1346 Flatiron Building, New York City

Please send to my address by return mail, a free circular, giving full particulars of your correspondence courses.

Name.....

Street and No.....

City..... State.....

or write for circular without sending coupon

## THE COIL THAT DOES THE TRICK

### In the Climb to the Clouds

Chas. Soules, driving a Pope-Toledo fully equipped Touring Car, made the ascent in 29:37 2-5. This is considered a most wonderful performance. Besides

## SPLITDORF COILS

were winners in nearly every event. Ask the Glidden Tourists how they like the Splitdorf Coil. Seventy-five per cent of the cars on the tour were equipped with them.

### HERE IS DR. PARKER'S LETTER:

MR. C. F. SPLITDORF. June 24th, 1905.  
Dear Sir: I feel that in the recent 200 mile contest my success, in a large degree, was due to your coil. It seems to me that your latest is superior to anything in use to date. I tell my automobile friends to give me a SPLITDORF for reliability every time. Very truly,  
C. B. PARKER.  
167 Remsen St., Brooklyn, N. Y.

Winner of Recent Economy Test of Long Island Automobile Club

**C. F. SPLITDORF** 17-27 Vandewater St.  
NEW YORK CITY

The Largest and Most Successful Coil Maker in the World.

## BRENNAN MOTORS SATISFY

### NOTHING CAN DO MORE

We make a special motor and transmission gear for

#### OLDSMOBILES

#### NORTHERN

Runabouts

#### OLDS

#### TOUR-

#### ING

#### CARS

#### CADILLAC

#### FORD

#### THOMAS

Models 17 and 18

#### GENERAL

#### YALE

#### AUTOCAR

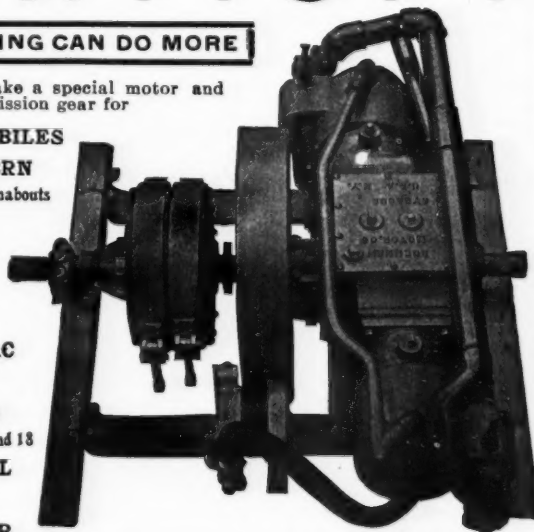
WHITE STEAM CAR GLIDE RAMBLER CLEVELAND

POPE-HARTFORD SANDUSKY RUNABOUT

ST. LOUIS RUNABOUT MARR CAR GROUT STEAM CAR

and all standard makes of cars

**BRENNAN MFG. CO. SYRACUSE  
N. Y.**

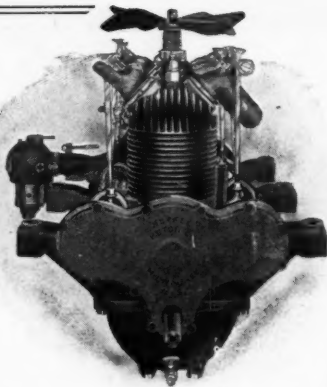


## Merkel Motors

can be relied upon when put to a severe test, because they are constructed upon principles that are mechanically correct and only the best materials enter into their makeup. They are guaranteed to satisfy the most critical, work perfectly and develop full rated H. P. Can be had in any of the following models:

Air cooled, 4 cylinder, vertical,  $3\frac{1}{2} \times 3\frac{1}{2}$  in., 12-14 B. H. P.  
Water cooled, 4 cylinder, vertical,  $3\frac{1}{2} \times 3\frac{1}{2}$  in., 14-16 B. H. P.  
Water cooled, 4 cylinder, vertical,  $4 \times 4\frac{1}{2}$  in., 20-22 B. H. P.  
Water cooled, 4 cylinder, vertical,  $4\frac{1}{2} \times 5$  in., 35-40 B. H. P.

MERKEL MOTOR CO., 1097 26th Avenue, Milwaukee, Wis.



The Standard American Cooler

## THE WHITLOCK COOLER

Was used on the LOCOMOBILE RACER THAT FINISHED THIRD IN THE VANDERBILT CUP RACE. It was never touched during the race. IT DID ITS FULL duty. It held its water and kept the engine cool.

The Only Cellular Coolers Made in America

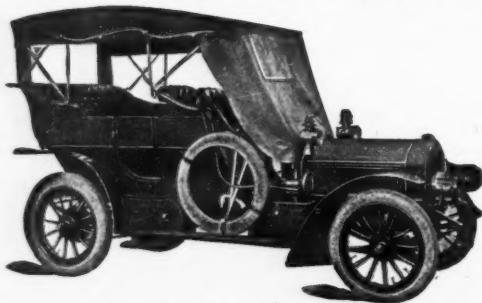
that were used in the 1905 and 1906 Vanderbilt Cup Racers, also the 1906 Gordon Bennett Race. Quality and efficiency only figure in an event of this importance. We make coolers of the **HIGHEST EFFICIENCY**. The leading makers of automobiles have recognized this fact by adopting

**THE WHITLOCK COOLERS**

continuously for the seasons of 1903, 1904, 1905 and 1906.

**THE WHITLOCK COIL PIPE CO.**  
Hartford, Conn.

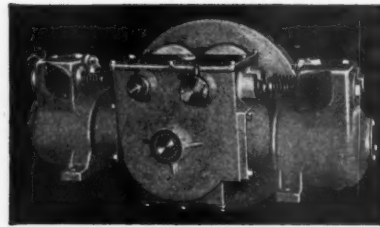
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**APPERSON BROS.,** KOKOMO INDIANA

25 H. P. Vertical 16 H. P. Opposed

## High-Class Automobile Motors



The  
**A. Streit  
Machine  
Co.**

CINCINNATI  
OHIO



Pat. allowed

We Think It's the Best Pump

and are so sure you'll think the same that we will let you have an

## IMPERIAL-WIXON COMPOUND AIR PUMP

to try before you buy

**\$5.00 ON APPROVAL**

An easy worker with big capacity.  
Strongly, compactly made.  
It abolishes tire troubles.  
Ask any dealer or drop us a line.

**IMPERIAL BRASS MFG. CO.**

249 S. Jefferson Street, CHICAGO

Motor Car Equipment Company, 55 Warren St., New York  
Sole Export Agents

## REPAIRMEN

Our Winter SNAPS  
LIST of Sacrifices is  
now ready and goods

are offered at sacrifice prices. Here are a few:

**4½ H. P. Mobile Steam Engines.**  
**5 H. P. Prescott Steam Engines.**  
**14 and 18 in. Copper Steam Boilers.**  
**Cadillac Front Axles.**  
**Bevel Differential Gears.**  
**Copper Fuel and Water Tanks.**  
**New Tubular Running Gears.**

And hundreds of other attractive lots of goods you need. Write us for the SNAPS lists.

**Neustadt Auto & Supply Co.**  
826-830 South 18th Street, ST. LOUIS, MO.

LATEST TYPE **WILLARD** LATEST TYPE

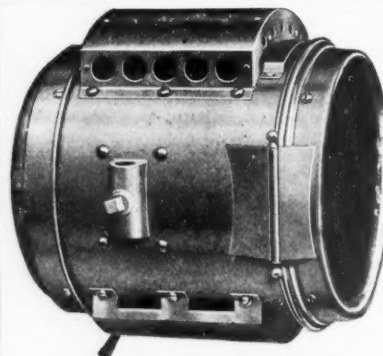
## STORAGE BATTERIES

Are operating Electric  
Automobiles Regularly

**75 MILES AND OVER ON ONE CHARGE**

Write for Particulars

**The Willard Storage Battery Company**  
Cleveland, Ohio



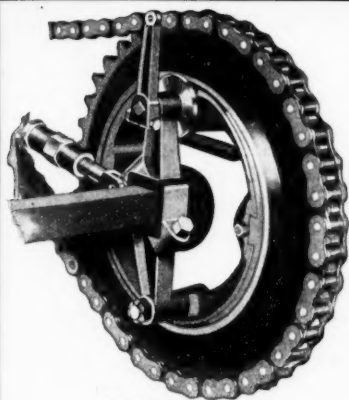
## PECK PILOTS

Are built to project all the  
**Light.**

Their construction is a guarantee against future trouble. The Results justify their selection for the finest cars. We aim to give the Strongest Lamp—the best Mirror Reflectors—the best tips and the finest finish of any on the market. Our prices are reasonable—Why not get the best value for your money.

Prices on application.

**THE SCOVILLE & PECK CO., NEW HAVEN, CONN.**



Made in three sizes

## GARFORD PARTS

Some of the best known high priced touring cars for the coming season will be composed exclusively of Garford parts. In a great many high grade vehicles they will be conspicuous features of construction. Isn't that enough to establish the character and worth of Garford products? We regret that for the present we cannot accept further orders for touring car parts without sacrificing the interests of present customers. Our productive capacity for 1907 will be so enlarged as to avoid the disappointment of fruitless inquiry.

## MOTOR WAGON PARTS

We can, however, promptly execute orders for steering gears, brakes, sprockets, motor hangers and other parts for motor wagons. They are suitable for all classes of commercial power vehicles, from the lightest to the heaviest. They are not "freak" components of a wonder working vehicle. They enjoy the rare distinction of having been thoroughly tested for some years past in the most varied and severe kind of commercial service. Circulars 2, 3, 5, 10 and 11 give information concerning them.

**THE GARFORD COMPANY, Elyria, O.**

Sales Manager: **HAYDEN EAMES, Cleveland, O.**



Pinion and Section Type also supplied.

## ARTILLERY WHEELS



Made from thoroughly seasoned hickory timber. Having the largest and best equipped Automobile wheel plant in the United States, we are prepared to supply manufacturers in quantity in the shortest possible time.

Write for particulars and our price lists.

**BUCKEYE WHEEL CO., Galion, Ohio**

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Patents Pending

**GOOD COOLERS**



**Stolp Mfg. Co.  
CHICAGO**

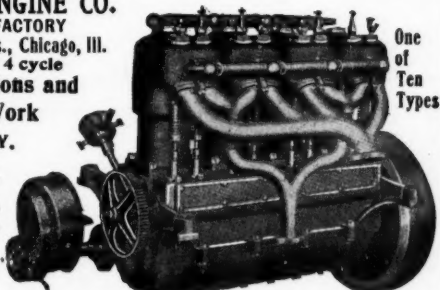
## MOTORS — All Commercial Sizes

**CONTINENTAL ENGINE CO.**

NEW OFFICE AND FACTORY  
Cor. Kingsbury & Huron Sts., Chicago, Ill.

1½-40 h. p. 2 and 4 cycle  
Designs, Specifications and  
Special Contract Work  
OUR SPECIALTY.

4-Cyl. air cooled,  
weight 90 lbs.,  
total. 3-Cyl. air  
cooled, 75 lbs.  
total.



One  
of  
Ten  
Types

Telephone North 1607

VERTICAL AND HORIZONTAL

**BLANCHARD**  
FAMOUS  
**FRENCH HORNS**  
"They Sound Like a Foghorn"  
"GET OUR PRICES"

**THE MOTOR CAR EQUIPMENT CO.**  
86 WARREN STREET  
NEW YORK  
SOLE U. S. AGENTS

"SOMETHING TO BLOW ABOUT."



## Baldwin Automobile Chains and Sprockets

**Best Material**

**Accurate  
Construction**

SEND FOR CATALOGUE



**BALDWIN CHAIN & MFG. CO. WORCESTER MASS. ...**

K. Franklin Peterson, Western Sales Agent  
166 Lake Street, Chicago, Ill.

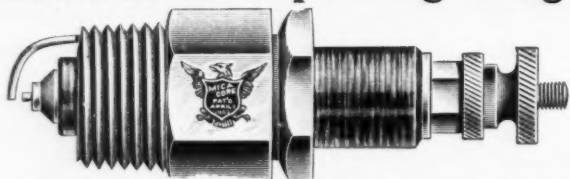
## Veeder ODOMETERS

For \$10.00 you can get the Form B Veeder Odometer which goes on the left steering arm, and for \$25.00 you can get the Form D, which goes on the dash. The latter type has two registers, one of which may be set to zero at will.

"It's Nice to Know  
How Far You Go."

**THE VEEDER MFG. CO., 25 Sargeant St., Hartford, Conn.**  
Cyclometers, Odometers, Tachometers, Counters and Fine Castings.

## AMERICAN Indestructible Sparking Plugs



Stand the test where all others are knocked out of business. Every one we sell brings us more business. This fact shows what they are. The Original and Only Double Insulated Pure Mica Core. All others are worthless imitations. Write for catalog showing our full line of coils, plugs, ammeters, switches, dynamos, etc.

**AMERICAN COIL COMPANY**  
FOXBORO, MASS.

Pacific Coast Branch, 306 McAllister St., San Francisco

**Leather belts invite trouble**  
Something is always happening to them and putting the lubricating system or fan out of order.

TRADE MARK

**Powco**

**Steel Belt**  
FOR OIL-PUMP OR FAN

is as pliable as leather, but stronger and more durable, and always works perfectly.

**"Lasts as Long as the Car"**

Your AUTO dealer should have it. If not, send us length of belt you are now using, name of car, and \$3, and we will send you a Powco BELT by return mail. Money back if not satisfactory. Write for Circular D.

**Philadelphia Ornamental Wire Co.**  
628-630 Filbert St., Philadelphia

**MUD**  
**FORGET IT AND USE**  
**WEED'S TIRE GRIPS.**  
POSITIVELY STOPS SLIPPING OR SKIDDING.  
THEY MAKE BAD ROADS GOOD.  
WEED CHAIN TIRE GRIP CO.  
SEND FOR BOOKLET "C" 28 MOORE ST.  
NEW YORK CITY.

## MUD GUARDS HOODS AND FORGED IRONS

*"The Best Kind"*

**HAYES MFG. CO.**

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## STOP THAT NOISE!

### NEW PROCESS PINIONS

Will stop the racket made by your Time Gears, Pump Drive Gears or Igniter Gears, and will outwear all other kinds of Noiseless Pinions.

LET US HEAR FROM YOU.

**THE NEW PROCESS RAW HIDE CO.**  
SYRACUSE, NEW YORK



## Lexington Hotel

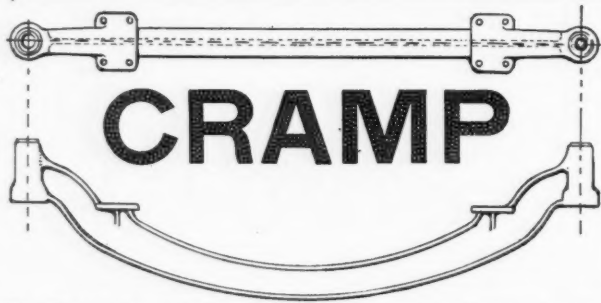
22d and Michigan Blvd

**Absolutely Fireproof**

European Plan — \$1.50  
and up per day.

The nearest and most convenient hotel to the Automobile District and Exhibition Halls for the February Show—special rates by the week

**INTER-STATE HOTEL CO.**  
Owner & Prop. E.K. Criley, Pres., T.M. Criley, V. Pres., L.H. Firey, Sec.-Treas.



The Winton Front Axle Casting of Parsons' Manganese Bronze  
Fifty thousand pounds of Ingots furnished for the 1906 Cars.

**The William Cramp & Sons & Ship Engine Building Company**  
PHILADELPHIA, PENNA.

## ALUMINUM CASTINGS

**GUARANTEED**  
**MAXIMUM**  
**STRENGTH**

Grade

B For general machine casting, pinions, cog wheels, propeller screws, hydraulic press and pump barrels, piston rods, screw bolts for steam cylinder.

**VERY TOUGH AND HARD.**

S Bearing metal for bearings, thrust rings, slide valves, cross head jibs, piston rings, etc.

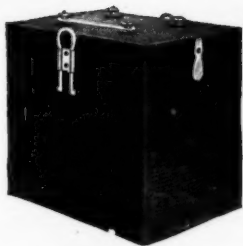
**VERY HARD AND DURABLE,**

but cannot cut the journal.

In ordering Phosphor Bronze Castings note adaptation of the qualities above given.

**GUARANTEED**  
**MINIMUM**  
**WEIGHT**

**Light Mfg. & Foundry Co.,** POTTSTOWN, PENNSYLVANIA



## "Exide" SPARKING CELLS

These cells have been designed and assembled with great care, especial attention having been given to each detail, making them a practical ignition cell for gasoline engines in Automobiles and Auto Boats.

### THE ELECTRIC STORAGE BATTERY CO. PHILADELPHIA, Pa.

Philadelphia, 250 North Broad St.  
New York, 49th St. and 8th Ave.  
San Francisco, 635 Howard St.  
Pasadena, 33 South Raymond Ave.

DEPOTS FOR THE PROMPT DELIVERY AND CARE OF EXIDE BATTERIES:  
Minneapolis, 3d Ave. So. & 5th St.  
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Pittsburgh, 5905 Centre Ave.  
Rochester, 150 South Ave.

Portland, Ore., 140 5th St., N.  
Cleveland, 404 Huron St.  
Detroit, 265 Jefferson Ave.  
Chicago, 204 East Lake St.

Los Angeles, 334 S. Main St.  
Buffalo, 649 Main St.  
Boston, 39 Stanhope St.  
Savannah, 309 Bull St.  
St. Louis, 3944 Olive St.  
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SALES OFFICES:—New York, Boston, Chicago, St. Louis, Cleveland, San Francisco, Toronto, Canada.

## Dust Guards

Make Motoring  
a Clean Sport

For \$20.00 I guarantee automobilists absolute freedom from dust. Booklet to inquirers.

W. H. BROWN

Lennox Building, CLEVELAND, OHIO

## WHAT YOU WANT—WHEN YOU WANT IT

SYRACUSE ALUMINUM AND BRONZE COMPANY  
SYRACUSE, N. Y.

ALUMINUM

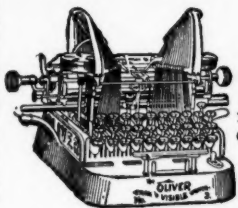
CASTINGS

BRONZE

## We Want Agents for the OLIVER Typewriter

—the standard visible writer—

in cities and towns where we are not at present represented. An agency for this progressive and up-to-date typewriter carries with it a dignified and profitable position for high class men. We aid our agents to achieve success and extend their field as their development warrants. We seek to make it worth while for good men to remain with us permanently. Previous experience neither essential nor objectionable. The Oliver agency can be carried on in connection with other business in some localities. If you are the kind of man we are seeking, we will enter into details by correspondence on receipt of your inquiry.



The Oliver  
Typewriter  
Co.,

100-200 WABASH AVE.,  
CHICAGO, ILL., U. S. A.

Foreign Office  
75 Queen Victoria St.,  
London, England.

**FOR AUTOMOBILE**

USED BY  
THE LARGEST  
MANUFACTURERS

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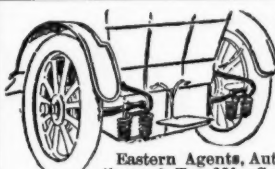
Sold at all Principal Garages  
**A. W. HARRIS OIL CO.**  
330 South Water St., Providence, R. I.  
and  
56 Fifth Ave., Chicago

**LUBRICATION**

## "SOLDERENE"

A new rapid flux and tin combined for mending and soldering all metals without the use of the solder, soldering iron, acids, etc., by simply heating the article and applying Solderene. A stick should be in every Repair Kit.

Sample 10c. Dealers Write for Price.  
**CHAS. A. THOMPSON CO.**  
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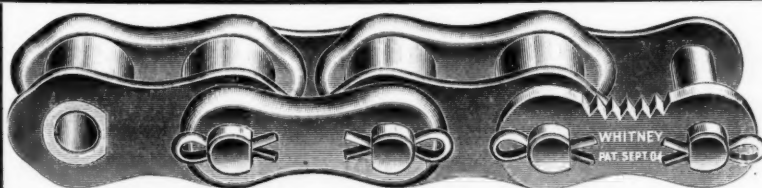
Absorbs all vibration

## The Supplementary Spiral Spring

No jolts or rebounds. Acts alike under light or heavy loads. Stands the test. Adds comfort and new delight to motoring. Saves engine, tires and springs. Will please you as it has hundreds of others. Write for circular to-day and state make and model of your car.

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4527 Delmar Ave., St. Louis, Mo.

Eastern Agents, Auto  
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148 W. 56th St., New York



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PATENTED

USED BY THE LEADERS



## AUTOMOBILE RUNNING GEARS WE BUILD ALL STYLES

With Pressed Steel or Angle Iron Frames and with Chain or Gear Drive; also all kinds of Bodies and Parts  
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Afford the only means of utilizing ALL of the light produced by the burner of an automobile headlight. You never can have too much light if you want to ride safely at night. Be sure your lamp has a B. & L. Mangin Mirror.

¶ These mirrors are of optical glass as accurately ground and polished as the search-light mirrors used on battleships, silvered by our own process, which assures the utmost brilliancy and permanence and tempered to withstand heat and vibration.

¶ See that your lamps have these mirrors. They are used by all the best lamp makers.

¶ When used on launches and motor boats of all kinds you are insured against accidents.

### BAUSCH & LOMB OPTICAL CO.

Manufacturers Microscopes, Photographic Lenses  
and Shutters, Eyeglass Lenses, Field Glasses, etc.

ROCHESTER, N. Y. NEW YORK, CHICAGO,  
BOSTON, SAN FRANCISCO, FRANKFURT, A/m Germany.

## TOOLS for producing duplicate Metal Parts

I would like to do your tool work, either wholly or in part. It is my business to make tools. Facilities for doing this work are first-class and every effort will be made to give satisfactory service.

**L. T. GAUSS, 222 Mill St., Rochester, N. Y.**

**DIES** for blanking,  
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**DRILL JIGS**  
**MILLING FIXTURES**  
**VICE JAWS**  
**SPECIAL CUTTERS, ETC.**



**Of course** if we would spend all our money for advertising as other people do, we could not put the exceptional values in our plugs as we do. Read this testimonial:

Ralph C. Lewis Levi Matthews

THE LEWIS & MATTHEWS CO. Garage

Foreign Automobile Selling Agts. Supplies

and Domestic 66, 68, 70 Stanhope St. Repairs

Cars Cable Address: "Autohead" Used Cars

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Very truly yours, THE LEWIS & MATTHEWS CO.,  
Ralph C. Lewis (M. M.)

The chauffeur shouts in tones of mirth,  
"BOUGIE MERCEDES" best on earth.  
It's DOUBLE STONE, will never crack.  
Absolutely self-cleaning.

Six months' guarantee. Price \$2. The greatest value ever offered. HERZ & CO., 187 Elm St., New York

Write for Vademecum of Ignition.

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Before Deciding. A Musical Horn for  
Automobiles and Auto Boats



Blows a full, strong blast from exhaust from gasoline engine, or can be attached to steam, same as ordinary whistle; blows with less than one pound pressure.

Each horn is tuned to a musical key—no discordant screeching note—is easily blown, and is strong and durable.

Comes in three styles—two, three or four horns. Write today for Catalogue, giving prices and full information.

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## SURETY

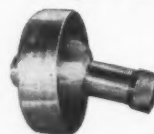
Messrs. Clemens & Merz were sure of the four No. 4 "Sta-Rite" Plugs which fired 850,000 charges in 24 hours—distance 1,084 miles. You can always be just as sure of any of the 47 sizes of improved "Sta-Rites" (six types). Insist upon having "Sta-Rites" in your new car and save bother.

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Garden Show Space, No. 78. Armory Show Space, No. 61. Coliseum Show Space, No. 178.

## A Swell Joint



The acme of specialization—the limit of excellence—is represented in our

## Universal

## Joint and Brake Drum

Your closest investigation of our claims will PROVE that NOTHING BUT THE BEST in EVERY RESPECT is used. Write us TO-DAY.

**SPICER UNIVERSAL JOINT MFG. CO.**  
PLAINFIELD, N. J.

Direct factory representatives: K. Franklin Peterson, 166 Lake Street, Chicago; Thos. J. Wetzel, 11 Warren Street, New York.

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**HOODS ANY STYLE OR SIZE**

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Applicable to tanks with or without pressure to show quantity of gasolene.

**SIMPLE, RELIABLE, SUPERIOR IN WORKMANSHIP**

The "Triumph" Gasolene Tank Gage is part of the regular equipment of all "Pierce Great Arrow" Cars for season of 1906. The only Gage endorsed by builders of first class cars.

See that your New Car has a "Triumph" Gage

### Boston Auto Gage Company

FACTORY: 8 Waltham Street, Boston, Mass.

OFFICE: 613 Old South Bldg.

# WELCH

## 1906 LIMOUSINE CAR 1906

FOR

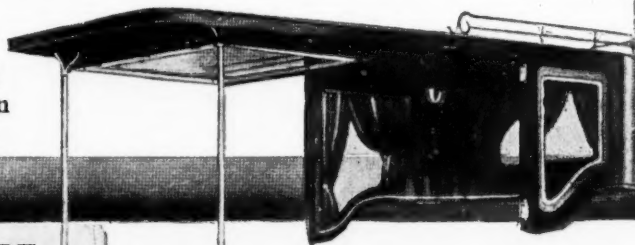
### FALL AND WINTER USE

PRACTICALLY IMMEDIATE DELIVERIES

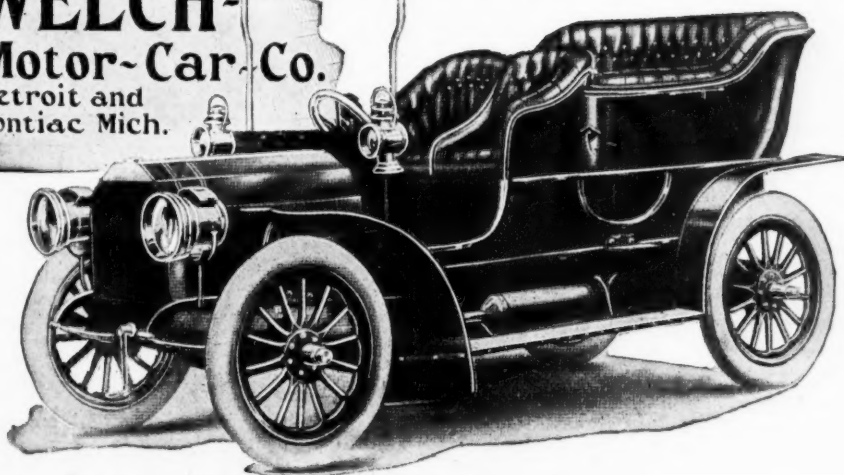
Ask for 1906 Catalog just out, describing WELCH PATENT DETACHABLE PULLMAN LIMOUSINE CARS.

Seven passenger car to suit all seasons; Cape Top in Summer, Half Limousine in Fall and Pullman Limousine in Winter. 4 to 50 miles on direct drive.

So simple  
a child can  
operate.



**WELCH-**  
**Motor-Car-Co.**  
Detroit and  
Pontiac Mich.



READ MOTOR AGE ... \$2.00 per Year

When Writing to Advertisers, Please Mention Motor Age.

¶ The Automobilist who today doesn't include a Jones Speedometer in his list of accessories is eliminating two thirds of the pleasure of automobiling—and is encouraging the officer of the law to make his arrest.



¶ When the Judge says: "Did you have any *positive* means of determining the speed at which you were traveling?"—he is asking if your car was equipped

with a Jones Speedometer. Don't forget that!

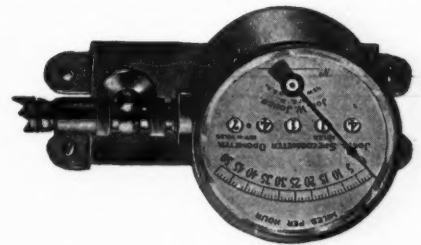
¶ The Mounted Officer with his primitive stop-watch method of timing the Automobilist can seldom make a case. Guess work testimony doesn't go in court. The Officer means well, but his method is wrong.



¶ Our Speedometer Bulletin contains speed information and tells of our Protection Tag. Free on application.

### JONES SPEEDOMETER

122 West 32d Street, New York



## DIAMOND WRAPPED TREAD TIRES

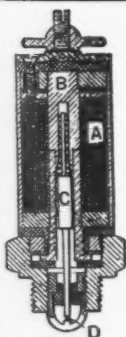
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THE OIL GUN WITH THE EXTENSION NOZZLE PREVENTS BREAKAGE KEEPS YOUR HANDS AND CLOTHING CLEAN

THE BEST OIL GUN EVER MADE AT ANY PRICE BEST MATERIALS. WHEN EXTENDED 30 INCHES. CLOSED 11 INCHES. SENT PREPAID FOR \$1.50

THE MOTOR CAR SUPPLY CO.  
1427 MICHIGAN AVENUE, CHICAGO  
"EVERYTHING FOR YOU AND YOUR AUTO"



## LOW TENSION MAGNETO

### THE GARON SYSTEM OF IGNITION

Combines all the good points of the **Jump Spark and Make and Break**, and is perfectly reliable. Easily applied to any engine, whether originally built for jump spark or make and break ignition.

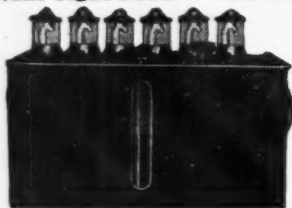
*Absolutely guaranteed*

*Let us show you how perfectly it works*

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## Force Feed Lubrication

Constant Sight Feed. No Liquids



**McCord & Co., 1402-30 Old Colony Bldg., Chicago**

E. J. Day & Co., Pacific Coast Distributors  
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Bronze Separators, Snaps, D Rings, Nuts, Screws, etc. Also Mud Guards, Dashes, Tool Boxes, Guard Bolts, etc.  
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All Leading Automobile Manufacturers Use this Cushion Spring.

Ask for Samples and Prices.

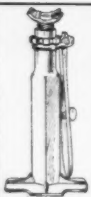
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## PACKARD ENAMELED IGNITION CABLES NEVER DISAPPOINT

They are giving entire satisfaction to over 100 high-class automobile manufacturers. Will you permit us to convince you of their worth?

PROOF AGAINST HEAT, GREASE, OILS and WATER

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## THE U. S. JACK

WITH UNIVERSAL HEAD  
LIFTS ANY WEIGHT  
CAR UP TO

**6000 Lbs**  
A child can operate it twice as fast as a man with other jacks. Impossible to get out of order. Complete weight 51.4 lbs. Thumb screw prevents rattle. Write us if your dealer has none.

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FOR AUTOMOBILES A SPECIALTY

WRITE FOR SAMPLES AND PRICES

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MILWAUKEE, WIS.



## JUMP SPARK COILS

For all Purposes—Single, double, triple and quadruple, for stationary engines and automobiles. Guaranteed in every particular. Fine Vibrator.

Send for Catalogue K.

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In cooling water of Automobiles **Won't Rust** or effect the metal. Freezing point 54° below zero. Non-precipitating.

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This Grade Meter is the handsomest article of its kind on the market, and is positively accurate. No vibration of the indicating hand.

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Double Insulation, Compression End, Rigid Points, most reliable and popular Plug on the market. 40,000 sold last year. Guaranteed 90 days.

Everything for the Automobile. Mammoth catalog for 10 cents in stamps.

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Made any way at least expense, shipped anywhere. Why not have a "Garage" or "Auto Inn" sign over your door. Your front is your best advertisement. Send for price list.

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## VALVELESS-PUMPS

### WITHOUT STUFFING BOXES OR SPRINGS

All Your Oiling Troubles Eliminate!  
Any Number of Feeds  
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Style  
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Quality

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### CUSHIONED TOPS



Use the Garlick Auto prop. It is cheap, strong and durable, and lengthens the life of a tire; keeps it right and proper. Better than hanging them on the wall. Will fit any machine, any weight. Send height of axle, from the floor, and price as below and we will send, express prepaid, to any part of U.S.

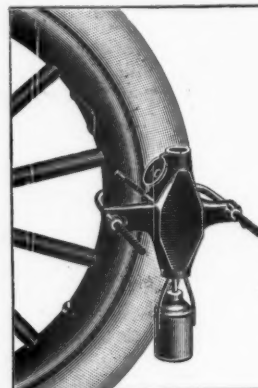


A—\$2.00 set of 4

Adjustable  
B—\$3.50 set of 4

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### ANYBODY CAN USE IT

Blowouts, sand-boils, glass cuts or other damaged spots on outer casings; torn off stems, split or punctures to inner tubes vulcanized as good as new with our Vulcanizers.

We want to send you circulars, and what others say.

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**STEEL BALLS**  
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## EXTENSION AND VICTORIA TOPS

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Our chains outwear all others. Replace your worn out chain with a "DIAMOND," which fits any standard sprocket.

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Voltage—4, 6 and 8  
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Prices—\$6, \$9, \$12  
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WE SELL EVERYTHING  
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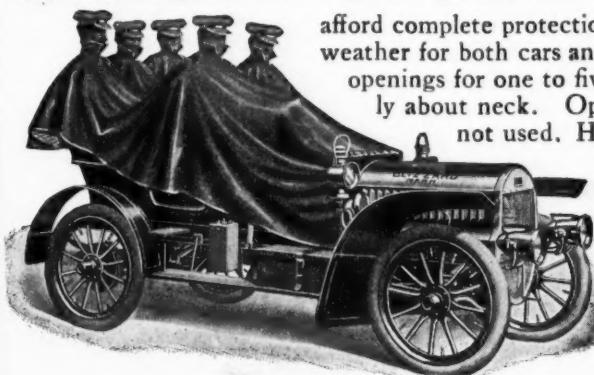
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Whether you own the lightest Runabout or the heaviest Touring Car, you cannot afford to be without it. Cars under 1500 pounds, \$40; cars over 1500 pounds, \$60; 4 suspensions.

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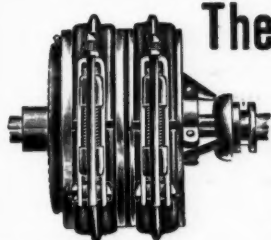
Special Design—Finest Quality—Built-to-Order  
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afford complete protection against storms and bad weather for both cars and occupants. Made with openings for one to five persons. Fasten closely about neck. Openings can be closed if not used. Heavy rubber cloth,—plaid back. We also handle  
**WEED CHAIN TIRE GRIPS**  
Prevent skidding and assist in traction on muddy roads.  
Write for **Special Deal** prices on above.

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**The Ball Improved Transmission**  
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**Automobiles and Motor Boats**

MADE ONLY OF SPUR GEARS

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A Time, Labor and Money Saver.  
For Public and Private Garages. No garage is complete without them.  
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BEST MADE FOR  
AUTOMOBILE CONSTRUCTION.  
SEND SPECIFICATIONS  
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BRANCH OFFICES—NEW YORK—CHICAGO.

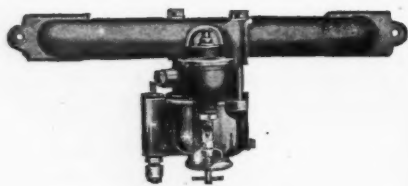
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**SPARK PLUGS**

The Most Reliable  
IGNITION  
ABSOLUTELY  
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Price, Postpaid  
\$2.00

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Special Model E for 1905 Winton

We are constantly bringing out special carburetors for different makes of cars. If you have an old car

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If you don't find one for your make of car, write us.

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Prices, top or side outlet, are as follows:

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1-2 in. and 3-4 in. gasoline outlet.....	\$11.00
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#### SPECIAL SIZE FOR

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Agents for

## PACKARD AND FRANKLIN

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Distributors for

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Four Cylinder, High Power Touring Car

Light Touring Cars Runabouts Delivery

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## THOMAS FLYER

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12-16-32 h. p., \$1000 to \$2000

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**AUTO SUPPLIES**  
FOR OWNER AND DEALER  
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## GOOD AGENTS WANTED

## PREMIER

FOR ILLINOIS AND IOWA

## RALPH TEMPLE

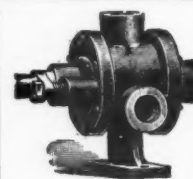
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Long Distance Gasoline Storage System "Tank buried—Pump located in building." Over a dozen styles from which to select. Ask for catalog. S. F. BOWSER & CO., Inc., XV Ft Wayne, Ind

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3, 4, and 5 Bow

Aluminum Bodies

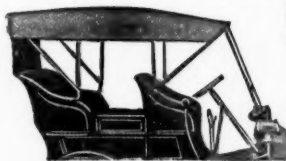
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SPRINGFIELD, MASS

**BESTOGO STORAGE BATTERY**

Essentially different from other Lead Batteries

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**Eclipse Tops**

LOOK BETTER  
WEAR BETTER  
MADE BETTER  
ARE BETTER  
than any others.  
It's an old story with us. We have been making good tops practically all our business lives.

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Eclipse Buggy & Mfg. Co., Fort Wayne, Ind.

**ORIGINAL MANUFACTURERS OF  
AUTO TOP MATERIALS**

We are headquarters for water-proof materials of all kinds and make a specialty of materials used in the manufacture of Auto Tops, Storm Curtains, Slip Covers, etc.

Write for samples and price list.

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FAYETTEVILLE, N. Y.

**COMPLETE LISTS**  
of Auto Owners, Dealers, Garages and Manufacturers

We are the only concern that can furnish complete lists of the above to date. New names daily, weekly and monthly. Postage guaranteed. References furnished. If you are dealing with others we will tell you what you should get on your contract.

AUTO DIRECTORIES CO., 108 Fulton St., New York City

**CANDY CARBIDE**

For FRENCH AUTO LAMPS (Impregnation dans le vide)

Packed only in 10 lb. cans. Price \$2 each. Discount to dealers in case lot of 12 cans.

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LUBRICANT GUN



Has no weak points. Strongest on the market. Has SEAMLESS Spout which will not split open in service, like soldered ones with which inferior oil guns are fitted. Will soon return its cost in oil saved and last a life time. Write us if your dealer cannot supply you.

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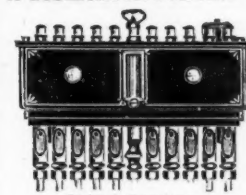
**Automobile Tire Protectors**

For the Prevention of

Skidding, Punctures and Wear

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**A LUBRICATOR FOR ANY CAR, ANY SYSTEM**

An automatic pressure feed roller instantly converted into GRAVITY FEED. Each sight feed in itself an automatic pump equally well used with any system of lubrication.

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Patent Pending.

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Automobile

Parts a Specialty

The Pittsburgh Reduction Company

Pittsburgh, Pa.

**Gilbert Auto  
Fabric Supplies**

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FOR SALE AT LEADING SUPPLY HOUSES. CATALOG SENT ON REQUEST.

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New Haven, Conn.

**Did You Ever Walk Home?**

On account of your batteries giving out unexpectedly? THE APPLE AUTOMATIC BATTERY CHARGER keeps batteries always alive and full of "juice." No uncertainty, no delays, no bothers from faulty ignition. See us at N. Y. and Chicago Auto Shows.

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**The IGNITION PROBLEM is SOLVED**  
in the "Lacoste" High Tension Magneto for Jump Spark Ignition

We guarantee this device to be ABSOLUTELY PERFECT.

We have done the experimenting.

NO BATTERIES. NO COIL. NO COMMUTATOR.

Everything for Electrical Ignition.

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**THE SOLVAY PROCESS COMPANY'S**

"KAL-KRYSTAL" makes the best non-freezing solution for Automobile use. Neutral and non-corrosive. Stands 50 degrees below zero Fahr. Put up in 10-pound cans. Makes 2 gallons of solution ready for use. For sale by all Automobile Supply Houses.

CARBONDALE CHEMICAL CO.  
739 UNITY BLDG., CHICAGO



A high class Coupe Top. Fits Olds Standard Runabout, can be attached in thirty minutes and detached in ten. Front glass hinged and can be raised at will. Price, \$60.00. Write for full description.

The Fellwock Autotop Co., Evansville, Ind.

**SPECIAL AUTO PARTS**

We make parts from your own design from either brass or aluminum

ON CONTRACT BASIS

Our positive power driven sight feed OILER will interest you. Write for description.

AUTO BRASS & ALUMINUM CO., Flint, Mich.

**REST YOUR  
TIRES with the "Springfield" Auto Lift**

Showing Lift in Position to Receive Car. You turn the cranks and the four wheels will raise 7 inches off the floor. Write for description and price.

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THE SHAWVER CO., Springfield, O.

**POCKET  
Battery Ammeter**

0 to 30 Amperes

Indicates in any position and in either direction of current. In testing single cells, the cord is not necessary.

Price \$3.50

ELDRIDGE ELECTRIC MANUFACTURING CO.  
Springfield, Mass.

**The  
"Breech-Block"  
Plug**

The Plug  
With a Handle

To take out your watch or open a Breech-Block requires just the same time, same tools, same effort, and one twist cleans the entire porcelain to the whiteness of snow.

To remove the porcelain only, loosen the clamping nut and it drops out of its holder, and the gaskets of copper drop with it. No digging!

It is nickelized inside and out. Highly polished and dust-proof. Sparks between two adjustable points and not between one point and the shell. Its points are protected. Porcelains are hand turned and so perfectly glazed that soot cannot stick to them. Their threads are cut to perfection, and every particle of the idea of cheapness is left out of them.

Postpaid, Anywhere, \$2.50. Booklet Free. Made by

EARL CANEDY, 2002 West Ave., CHICAGO HEIGHTS, ILL.

**There was a time** when a regular and reliable Ignition was a problem. This problem is solved today by the **HERZ TIMER**. We have made and sold over 70,000 of these instruments last year, to the most prominent manufacturers in this country, as well as in Europe, and are making now four distinctly new models for four of the leading manufacturers in America. The reason for this success: It's Tool Steel vs. Tool Steel, best Sheffield grade obtainable; **Sticking Vibrators** absolutely impossible; running packed with grease; built like a watch, tool maker's work throughout. We make 18 models and fit any make of motor. State make of your motor when ordering.



**HERZ & CO.**  
187 Elm St. NEW YORK

Write for the Vademecum of Ignition.

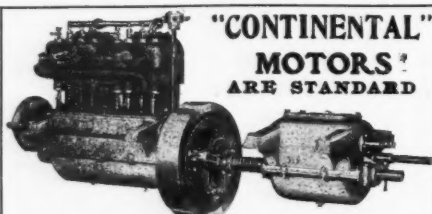


"Everything for the Autoist but the Auto"

## THE NEW BOOK IS READY PLEASE SEND FOR IT

We have issued a new illustrated catalogue de luxe of 200 pages devoted to the new imported and domestic models of automobile apparel for men and women for Fall and Winter service. Presented are garments of fur, leather, cloth and rubber, together with a comprehensive series of requisites. To you we would be pleased to mail a copy without charge.

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## "CONTINENTAL" MOTORS ARE STANDARD

Our "Continental" Motive Power Equipment, consisting of 2 or 4 cylinder motor, (10 to 4 h. p.) assembled with Clutch and Shaft Drive Transmission, is ready to put in your car.

HIGHEST EFFICIENCY LIGHT WEIGHT RIGHT PRICE  
AVOID INFERIOR IMITATIONS  
ASK FOR CATALOGUE

**Continental Motor Mfg. Co.** 240-244 W. LAKE ST. CHICAGO  
K. F. PETERSON, Direct Factory Representative

We make Tops and Cushions and retrim Automobiles throughout. Also do Painting of the highest class. Prices reasonable for fine work. There is **economy and satisfaction** in having such work done outside of the city.

**W. S. FRAZIER & CO.,** Aurora, Ill.  
Chicago Office, 371 Wabash Ave.

## MAT'S BODY POLISH Prevents the Finish from Cracking or Staining

Used by the Chicago Garages. Send for sample.

**\$2 PER GAL. MAT. WEIS**  
1412 Michigan Avenue, CHICAGO

## C. O. T. ACID CURE SOLUTION AND VULCANIZING FLUID.



WHY worry about a puncture when C. O. T. Acid Cure Solution will stick a patch while you sleep, and fill up a cut in your auto shoe by using it to join a piece of rubber size of cut. Not loosened by heat. Plain rubber patches both round and oblong.

**CHAS. O. TINGLEY & COMPANY**  
Rahway, N. J.  
Beckley-Ralston Co., Chicago, Ill., West. Dis.  
Phoenix Auto Supply Co., Southwestern Agents.

## EVERYTHING FOR Man, Motor and "Mechanician"

Specialties and Leather and  
Wool Winter Clothing

**A. L. DYKE AUTO SUPPLY CO.**

OLIVE AND WALTON STREETS  
ST. LOUIS, MO.

**ROBT F. BRITTON**  
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ALUMINUM, PHOSPHOR BRONZE,  
BEARING BRONZE AND BRASS  
CASTINGS FOR AUTOMOBILES  
**HOFELLER BRASS FOUNDRY CO.**  
BUFFALO, N. Y.

## HOT SPRINGS, ARK.

Only 20½ Hours from Chicago  
VIA THE

## WABASH

You can leave Chicago daily at  
11:30 A. M., on the

## BANNER BLUE LIMITED

the finest train on earth, and  
connect in Union Station, St.  
Louis, with the Hot Springs  
Special on the Iron Mountain,  
reaching Hot Springs next  
morning at 8 o'clock.

Write for free Booklet telling  
all about this popular health  
and pleasure resort.

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**C. S. CRANE, F. A. PALMER,**  
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Special rates for continuous advertising in these columns upon application.

**FOR SALE—1905 Packard, side entrance;**  
\$2,500. E. C. Bull, No. 754 Main St., Buffalo, N. Y.

**FOR SALE—20 H. P. 1905 Locomobile with**  
top; in perfect condition; price \$2,000; owner getting 1906 car of same make. Address Monday, care MOTOR AGE.

**WANTED TO TRADE—New Simplex piano**  
player for second-hand automobile; 28  
pieces with it. Cost \$310. What have you  
to offer. L. C. Larson, Sioux Center, Ia.

**WINTON QUAD FOR SALE—Good as new,**  
absolutely guaranteed first class in every  
respect, run not to exceed 2,000 miles, best of  
care; has extra inner tubes, gas lamps, fitted  
with Schebler carburetor, Warner instrument;  
cost over \$3,300; will sell for \$1,500; demon-  
stration gladly given; car taken in trade for  
Model K Winton. O. W. Johnson, 202 N. Mad-  
ison St., Rockford, Ill.

## Very Low Excursion Rates For Christmas Holidays.

To all points on the Nickel Plate Road between  
Chicago and Buffalo. Dates of sale, December  
23, 24, 25, 30 and 31, 1905, and January 1,  
1906, with limit returning January 3, 1906.  
Rate one and a third fare for the round trip.  
Individual Club Meals, ranging in price from  
35c to \$1, and Mid-day Luncheon, 50c, served  
in Nickel Plate dining cars; also service a la  
carte. No excess fare. Chicago city ticket  
offices, 111 Adams St. and Auditorium Annex.  
Depot, La Salle and Van Buren Sts., the only  
depot in Chicago on the Elevated Loop.

**WILL TRADE** quarter section of fine wheat  
land in Kansas for 1905 runabout; money  
maker for somebody. W. C. Guyer, Freeport,  
Ill.

**FOR SALE—Hoffman ten horsepower tonneau**  
car in first class condition; has had all worn  
parts replaced; 28x3½ Diamond tires; this car  
will be sold at a bargain. J. L. Murray, 215  
S. Main, Bloomington, Ill.

**AUTOMOBILE—A 1904 Winton, in elegant con-**  
dition. H. H. C., 1610 Reading Rd., Cincin-  
nati, O.

**FOR SALE—1905 White steam touring car**  
in the pink of condition; fine cape top, five  
lamps, Prest-o-lite tank; refinished and looks  
as good as new; cost new \$2,800; a big bargain  
at \$2,000; would take smaller car in part pay-  
ment. Adams & Hart, 47 and 49 N. Division  
St., Grand Rapids, Mich.

## FOR SALE

**THOMAS TOURING CAR—1904 model; 3-cyl-**  
inder; seats five persons; perfect condition;  
thoroughly overhauled by factory recently; this  
car was driven by the owner eleven hundred  
miles from Macon, Mo., to Buffalo without an  
accident and never missed fire once on the  
trip; new tires this season; I refer to the E. R.  
Thomas Motor Co., of Buffalo, as to condition  
of car; my reason for selling is that I have  
purchased a larger type car; price and full de-  
scription on application. Address owner, Wil-  
liam R. Compton, Macon, Mo.

**FOR SALE—8 H. P. Olds engine in runabout**  
car; 2 new Morgan & Wright tires; \$200.  
Box 143, Cayuga, Ind.

**FOR SALE—Buckboard, '05; better than new;**  
arranged to carry four; 3-inch tires on rear;  
other improvements; \$225 and a bargain. H.  
B. Sparks, Charlottesville, Va.

**FOR SALE—1905 Oldsmobile light tonneau**  
car; 10 horsepower; paint, machinery and  
tires good as new; cost, with extras, \$1,050;  
a bargain at \$850. Address Ed Connine, Wex-  
ford, Mich.

**FOR SALE—New two-cycle gasoline engine, ½**  
h. p., \$30. J. Hall, Mound City, S. D.

FOR SALE—Franklin, model E, runabout, in excellent condition; run six months; gas lamps, oil lamps and gas tank. L. E. Voorhes, 942 West Fifth St., Cincinnati, O.

FOR SALE—\$325 takes my 1902 Model Winton touring car; paint is good, in good running order and is fully equipped. Edw. E. Gifford, Cochesett, Mass.

FOR SALE—1905 Olds touring car, 10 h. p.; A1 condition, having been used on paved streets. Address L. W. Huckins, Shreveport, La.

### FOR SALE

WINTON TOURING CAR—Good bargain. Apply 84 E. 16th St., Chicago. E. W. Willcox.

FOR SALE—Touring runabout, 10-12 h. p., seats four; used little; fine shape; \$390; want 4-cylinder. Clenzol Co., Sandusky, Ohio.

1905 WINTON, Model B, first class in every respect, run not over 2,500 miles, complete with cape top, two 8 in. Rushmore search lamps with generator, oil lamps, horn, 2 extra Michelin tires with Samson tread, extra inner tubes, 1906 Holly carburetor; this car with extras cost owner over \$3,000; first check for \$2,000 takes it; demonstration gladly given; have taken this car in trade for Model K Winton. O. W. Johnson, 202 N. Madison St., Rockford, Ill.

FOR SALE—3-cylinder 20 horse Pope-Toledo, in good shape; 32x4" tires, nearly new; 3 gas lamps, horn, extra tube and tools; owner has high powered car and will sacrifice for \$550; cost \$3,000; this is an exceptional snap. J. L. Murray, 215 S. Main, Bloomington, Ill.

### FOR RENT

Building suitable for automobile factory, 25,000 square feet, very light, steam heat throughout, large yard, boiler, engine, electric freight elevator; fifteen minutes from downtown; asphalt street, electric cars, etc.; rent reasonable. Apply G. B. Read, 9 Plymouth Place, Chicago.

FOR SALE—12-15 H. P. touring car in good condition; cost \$1,400, will sell for \$500. Write for particulars to F. R. Morrison, Ash-tabula, O.

FOR SALE—Packard late 1903 Model F; recently overhauled at factory. Will equip with brand new tires and sell for \$750 cash. First check takes it. H. W. Beach, Montrose, Pa.

FOR SALE—1905, 50 H. P. Thomas Flyer, cape top, glass front, Gabriel horn, Hartford shock absorbers, five lights, perfect condition; a bargain; owner purchased 1906 Thomas. Address L. R. Clinton, Binghamton, N. Y.

FOR SALE—1½ h. p. motor cycle engine, \$20. C. Shook, Waterloo, Iowa.

FOR SALE—Premier, Model F, 1905, four cylinders, air cooled, 16 h. p., side entrance, Studebaker top, glass front, side curtains, Presto light gas tank, four new lamps, tools, etc. Almost new. Cost \$1,750. Price \$1,100 cash. No trades. A. B. Clay, 1240, 324 Dearborn St., Chicago. Phone Harrison 2375.

HIGH-GRADE Marine and Automobile Engines, 2 and 4 cycle, 2 to 30 h. p. Lowest prices. A. J. Houle Motor Works, S. East St., Holyoke, Mass.

\$300 GROUT SURREY. Thoroughly overhauled; fine condition. Dr. Frank Graham, Tennessee Trust Bldg., Memphis, Tenn.

FORD BARGAIN—1904, Model C, 10 h. p. Ford auto; detachable tonneau, full lamp equipment, searchlight, Blanchard French horn, two extra tires and all modern appurtenances. Good condition. E. C. Clark, Paducah, Ky.

FOR SALE—Ford Model "F." Bought last July. Complete with top, storm apron, oil and acetylene lamps, Presto light gas tank, horn, heavy car type Fisk tires. Price \$700. Address "Ford F.," care Motor Age.

1905 ROYAL tourist cars in excellent condition; taken in trade for 1906 Royals. We have several of these cars for prompt delivery. C. A. Duerr & Co. (Incorporated), 1787 Broadway, New York City.

FOR SALE—Prescott combination 2-4 passenger steam car, in perfect running condition; brand new Model C Mason engine; all improvements; bargain if sold at once. For further description write R. S. Trulock, El Reno, Okla.

# Logan

## 1906

### That Car of Quality

2 Cylinders Opposed.  
Air Cooled.

Speed 15 Miles per Hour.  
Capacity 1500 lbs.



THE DEPOT CARRIAGE AND BAGGAGE COMPANY

Kansas City, Mo., Nov. 22, 1905.

THE LOGAN CONSTRUCTION CO., Chillicothe, Ohio.

Gentlemen:—We want to let you know how well we are pleased with your "Light Air Cooled Delivery Car" which we purchased from you some six weeks ago. It has more than fulfilled our expectations, so much so that we will place an order for several more at once.

It is about doing the work of three two-horse wagons, and is covering from seventy to ninety miles a day with less expense than the shoeing of one team would amount to, and is so simple that any one of our drivers can operate same without any trouble.

Wishing you the success that you deserve in making so good a car, we remain,

Yours very truly,

THE DEPOT CARRIAGE & BAGGAGE CO., F. W. SCHOOLEY, Sec'y.

"Logan" MODEL I, WILL DO AS WELL FOR YOU

Write for Catalogue A122.

The Logan Construction Co., Chillicothe, Ohio

FOR SALE—1905 or Model E WHITE, with complete touring equipment, i. e., gas head-lights, cape top, portfolio, extra tool boxes, complete tool equipment, including some specials, extra tires, tire irons, large assortment of repair parts, jack, etc. Wired for electric lights, gauge lamp, 1906 engine; speed and odometer. Will demonstrate that car is in perfect condition; has just been repainted. Make an offer. Box 71, care MOTOR AGE.

FOR SALE—Packard Model L, in A1 condition, fully equipped with lamps; price \$2,000. Also one Packard model N, as good as new, fully equipped with head lamps and new Bailey tread tires; price \$2,600. One 1904 Franklin touring car, with full set of lamps, detachable tonneau and Goodyear detachable tires, almost new; can be bought for \$1,000 off taken at once. Bates-Odenbret Auto Co., Milwaukee, Wis.

1905 White Steamer, equipped with canopy top, glass front, Gray & Davis mirror lens headlights and generator; baskets, autometer, electric light for gauges. Address Box 287, Portland, Me.

### Scrap Auto Tires

#### We Buy Them

LAUN-CARLSTEN CO., 90 Metropolitan Bldg., Chicago

FOR SALE—Cadillac, 1904 Model "A." tonneau; newly painted; guarantee good condition. Capen Motor Car Co., St. Louis, Mo.

### AUTOMOBILE BARGAINS

Through a business deal we obtained a few standard \$1,400 side entrance touring cars, 20 H. P. double opposed engine, and \$750 runabouts, made by one of the oldest automobile makers in the country. ALL NEW GOODS. Shipments made direct from factory. Full description on application. The opportunity of a lifetime. Write today, making best cash offer. Having already made our profit on these cars, we can afford to let them go at a sacrifice. Best cash offer takes first machine, next best second, etc., until closed out regardless of cost. No trades. Skinner & Skinner, 4134 Indiana Ave., Chicago.

FOR SALE—2-cylinder Hoffman, 4x5, upright motor, \$75; cost \$150. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

WANTED—Party to take interest in good paying business; must be able to invest from \$1,000 to \$2,000; must be capable of doing office work. Address Ress & Co., top floor Pratt Block, Kalamazoo, Mich.

### AUTOMOBILE DEALERS EVERYWHERE—

We have a live proposition to offer dealers and agents in every town and city to handle our ready to deliver cape cart tops. Auto Top & Equipment Co., 1604 Broadway, New York City.

FOR SALE—8-10 passenger wagonette; sample car 1905-6 Model; steam; price and description on application. Thompson Auto Co., Olneyville Sq., Providence, R. I.

BARGAINS while they last. New 2 H. P. marine engine, \$80; new 6 H. P. 2-cylinder marine engine, \$165; new 4-cylinder marine engine, only \$300; fully guaranteed. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago, Ill.

FOR SALE—Thomas tonneau model 18 touring car, with canopy top, extra tire, etc., in fine condition; \$425. C. W. Travis, Evansville, Ind.

### Christmas Holiday Excursion Rates

Via the Nickel Plate Road between Chicago and Buffalo. Dates of sale, December 23, 24, 25, 30 and 31, 1905, and January 1, 1906, at a fare and a third for the round trip, with return limit of January 3, 1906. Through train service to New York City, Boston and other eastern points. No excess fare. Individual Club Meals served in Nickel Plate dining cars. Three through trains daily from La Salle and Van Buren St. Station, the only depot in Chicago on the Elevated Loop.

FOR SALE—1904 Winton; canopy top; new sprocket; new chain; extra tire; oilers on dash; good tires. In good condition. Price \$1,000. Ralph E. Clarke, Coldwater, Mich.

FOR SALE—4½x4 opposed engine castings; complete, \$30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

AUTOMOBILE—Cadillac, B model; good order; cheap. The Globe Chemical Co., Court and Deercreek, Cincinnati, Ohio.

FOR SALE—Complete sets of castings of automobile and marine engines with blue prints, single cylinder, 4 H. P., castings, \$25; double cylinder 8 H. P. castings, \$40; four cylinder 18 H. P. castings, \$95. Witte Gas & Gasoline Engine Co., 47-49 S. Canal St., Chicago.

AGENTS WANTED—For our automobile and marine engines. Spark plugs, 50c and \$1, direct to consumer. Coils, carburetors and all supplies at corresponding prices. Columbus Screw & Machine Co., Columbus, O.

FOR SALE—10 H. P. transmission, \$30. A. M. Symonds, 901 N. Fairfield Ave., Chicago, Ill.

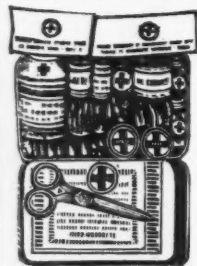


## See Its Graceful Lines

Our General Service Wrench is just the wrench you want for your 1906 kit. Light, long, strong and handy. It is drop forged from the best bar steel, and case-hardened. Five sizes. Have you asked for for 40-page machine wrench booklet?

**THE BILLINGS & SPENCER CO.**  
HARTFORD, CONN.

## Protection for Automobilists



Sixteen articles in a metal case for every body who is liable to injury. Bandages, Dressings, Remedies. Quality Guaranteed. Send us your address and we will send the case; if you are satisfied after examination, send us one dollar; if not, return the case at our expense. Every automobilist ought to have one. Send for circular.

U. S. Emergency Case Co.  
11 Weaver Bldg., Utica, N. Y.

## OLD Tires Made NEW

New Tires Made Puncture-Proof

### NEWMASTIC FILLING

For Clincher and Single Tubes

Just as Resilient as a Pneumatic  
Just as Safe as a Solid Tire  
How Do We Do It?  
Write Us and Learn

**NEWMASTIC TIRE CO.**

1303 Michigan Ave., CHICAGO, ILL. Tel. South 1301  
ST. LOUIS, MO.



## Your \$5.00 Back

If after 30 days' trial you don't feel absolutely sure the

## SKINNER COMPOUND AIR PUMP

is the best automobile tire pump, and the easiest to operate, that you have ever tried or ever seen. Compact, light and convenient for carrying.

\$5 Express Prepaid

**SKINNER & SKINNER**  
Mfrs.

4154 Indiana Avenue  
CHICAGO

Reference: Illinois Trust & Savings Bank, Chicago

## LEA TIRE PUMP



Saves tires—gauges pressure and inflates evenly. Saves you—does away with backache and "shortwindedness."

Write for descriptive book B. Inquire for our proposition to agents.

William S. Jones 112 N. Broad Street Philadelphia

Sole Selling Agent for MOTOR CAR SPECIALTY CO., Trenton, N. J.

## Hyatt Roller Bearings

TURN FRICTION INTO ENERGY

**HYATT ROLLER BEARING CO.**

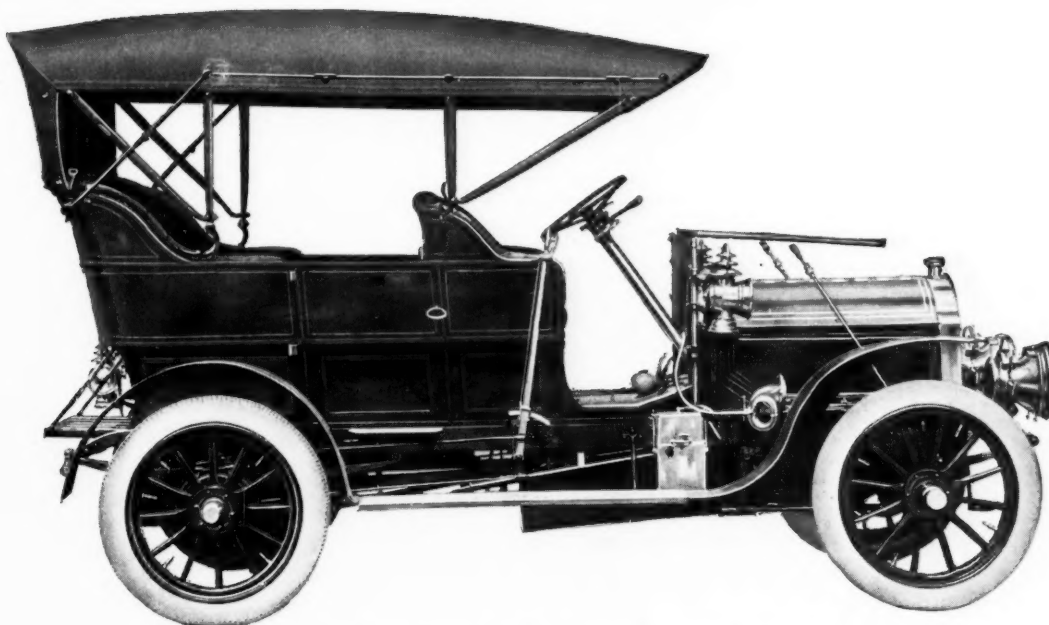
Harrison, New Jersey

ARE YOU FROM MISSOURI?

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Bausch & Lomb Optical Co.	80	Gabriel Horn & Mfg. Co.	80	Morgan, W. J.	60	Steel Ball Co.	73
Beaver Mfg. Co.	70	Garford Company	77	Morgan & Wright	Cover	Stevens, J., Arms & Tool Co.	33
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